



FRIDAY, AUGUST 22.

Locomotive for "Logging" Railroad.

The engraving herewith represents a locomotive built by H. K. Porter & Co., of Pittsburgh, for use in what is called a logging railroad in Michigan—that is a railroad for hauling logs out of the woods to saw-mills. Some particulars as to the methods of construction adopted in these small engines may be found on page 416 of the *Railroad Gazette* for May 30, 1884.

These engines are generally running in backwoods, remote from any facilities for repair, and as the work is severe it is very necessary that they should be well constructed and easily repaired. The latter object is to a great extent attained by the use of interchangeable parts, some of which can be kept in stock to provide against any delay caused by an unexpected break down.

The general construction of the engine can be clearly understood from the illustration, and the subjoined detailed specification:

Specification of Tank Locomotive.

General Description.—Gauge of track, 50 $\frac{1}{2}$ in.; rail of 30 lbs. per yard; fuel, wood; service, logging railroad; tank on boiler; cylinders, 10 in. diameter by 16 in.; driving wheels, 4 in. number, 36 in. diameter; 2 rear pony wheels 22 in. diameter; rigid wheel-base, 5 ft. 3 in.; total wheel-base 13 ft. 4 in.; weight of engine, in working order, about

Pump and Injector.—Full stroke pump with valves and cages of best composition, metal and well fitted. Pump and injector, each capable of separately supplying sufficient water, regulated from foot-board, and with seamless copper pipe connection.

Cylinders.—Of the best charcoal mixture of metal, as hard as can be worked, well and accurately secured, placed horizontal. Pistons, solid heads, with our combined spring ring and steam packing.

Guides of steel, properly secured to cylinders and guide yoke. Crossheads with babbitt bearings.

Valve Motion.—Shifting links of hardened steel, graduated to cut off equally at all points of stroke; hardened steel blocks with long flanges. All working joints extra long bearings and fitted with hardened steel pins and thimbles.

Drivers.—Cast-iron centres; best cast-steel tires. Best forged iron axles. Best cast-steel crank-pins.

Springs of best cast steel placed one over each driving box. Driving boxes with brasses and cellars, and flanged wedges and shoes.

Connecting-Rods.—Main and parallel rods of best forged iron, forged solid, fitted with taper bolts and full complement of straps, keys and oil-cups. Brasses babbitt.

Frames.—Of best forged iron, 2 $\frac{1}{2}$ in. wide by 2 $\frac{1}{2}$ in. deep, pedestals lap-welded on; frames well braced. Pedestal braces secured by lugs and bolts. Attachments of boiler to frames, allowing free expansion and contraction.

Rear Truck.—Equalizers of best forged iron, with steel bearings, placed at sides, connecting springs; forged axle, best cast-steel springs; centre-bearing and swing-motion, radial bar, hangers with steel pins, thimbles. Pilot at front end of seasoned hardwood, iron bound, well braced.

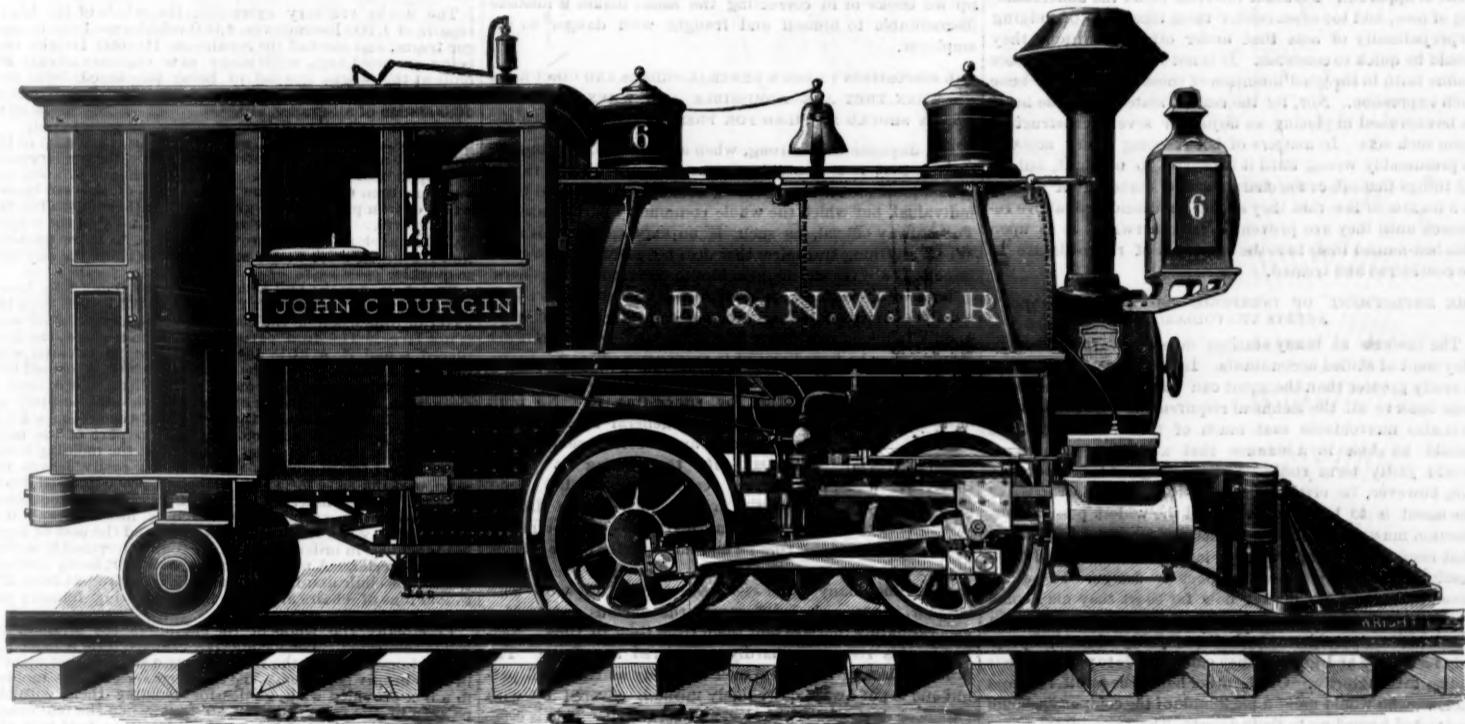
Some of the Principles Governing the Faithful Handling of a Railway Company's Business and the manner in which the Degree of Good Faith that is Observed is to be Ascertained.

[From Marshall M. Kirkman's forthcoming work on "The Theory and Practice of Collecting Railway Revenue Without Loss."]

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The accompanying chapter is intended to explain some of the surroundings and principles that govern the traffic of railroads and the discharge of business incident thereto, as the same affects the affairs of agents and others. The exposition that it contains and the suggestions that it makes are intended to explain the conduct of affairs from the officers' or companies' standpoint. It is intended to explain the theory of business and the subtleties that underlie its various phases; to afford a general as well as a minute view of the business of a railroad as the same is exemplified in the station affairs and the incidents springing therefrom; to afford every railway official information that it is desirable all should know and that they should look at from a common standpoint; so that they may be the better able to cooperate with each other upon a uniform and intelligent basis; to explain to traveling auditors the vital interests that cluster about the petty details with which they are continually busied. This last is especially important, particularly with new and inexperienced officials. The object of this chapter is to put in a permanent shape for reference some of the general principles and details that underlie the conduct of railway business, and that should be accurately and minutely known by all who have anything to do with the affairs of stations or agents.

Some portions of the chapter refer only to particular persons, other portions have reference to matters that interest



LOGGING LOCOMOTIVE BY H. K. PORTER & CO., PITTSBURGH.

31,000 lbs.; 26,000 on driving wheels; length over all, 26 ft.; width, 8 ft. 4 in.

Boiler.—Shell of No. 1 Pennsylvania cold-blast, charcoal hammered iron; $\frac{1}{2}$ in. thick, except cylindrical sheets $\frac{1}{2}$ in. thick, and round head $\frac{1}{2}$ in. thick.

Diameter at front end, 31 in., and at back end 36 in., wagon-top style.

Dome, 21 in. diameter and 20 in. high, with cast ring and cap.

Fire-box of best homogeneous cast-steel, 40 in. long, 30 in. wide at grates, and 30 in. wide at top, inside measurements; crown, sides and door sheets $\frac{1}{2}$ in., and flue sheet $\frac{1}{2}$ in. thick; water space $2\frac{1}{2}$ in. at bottom, tapering wider at top. Stay-bolts, $\frac{1}{2}$ in. diameter, screwed and riveted in best manner, 4 $\frac{1}{2}$ in. between centres. Crown-bars of open pattern, welded at ends with bolts screwed and riveted to crown sheet, with ample water space; with bearing on upright sheets and stayed to dome. Flues of best iron, lap welded, 68 in. number, 2 in. diameter, 98 in. long, set with copper ferrules at fire-box ends.

Fire-door hole made by flanging and lapping inside and outside sheet.

Boiler thoroughly braced, stayed and riveted, and provided with cleaning holes with brass plugs at front and back of fire-box and in front flue head. Boiler tested by steam or hydraulic pressure, as desired, to 180 lbs. per square inch.

Balanced throttle placed in dome. Ground metal ball joints in all steam-pipe connections.

Ash-pan provided with front and back dampers worked from foot-board. Grate for wood.

Stack.—Wood-burning, with spark-arrester and steel wire netting. Adjustable petticoat pipe.

Cab.—Of seasoned hardwood painted, put together with joint bolts, well secured to boiler and runboards; neatly designed and finished, with side sliding doors, rear windows.

Furniture.—Engine furnished with two sand-boxes, bell-whistle, safety and relief valves; steam gauge, cab lamp, cab cylinder oilers; blow-off, buster, blower, gauge, pet and other cocks; full complement of brass work; extra exhaust nozzles; tool box and cushion; tools, including two screw-jacks, tallow can and two oil cans, spanner, socket and six flat wrenches, fitting all nuts and bolts; two monkey-wrenches, steel and copper hammers, two chisels, pinch-bar, poker and scraper, and water gauge.

Finish.—Cylinder heads with polished cast-iron casings; steam chest with cast top and body casings painted; boiler and cylinders lagged and cased, with planished securing bands. Wheel covers, hand rails and runboards. Engine well and neatly painted and varnished.

Tank.—Placed over boiler; well supported and secured; neatly finished; capacity 600 gallons. Fuel carried in fuel spaces at rear part of cab, and of extra large capacity.

General Features.—Engine throughout of best material and workmanship, and built to thorough system, by which parts are drilled, planed, turned and fitted to standard templets and gauges, and made interchangeable with all engines of same class. All bolts of United States standard thread; all cocks fitted to standard gas taps. All movable nuts and all wearing surfaces of steel or iron case hardened; all wearing brasses of six parts ingot copper to one part of tin; all cast-iron wearing surfaces of hard close charcoal mixture of metal. To be fired up and worked before shipment.

Hand brake applied to driving-wheels. Siphon steam pump attached with hose to reach water 15 ft. below rail.

all classes of railway operatives and officials. There is nothing contained herein of a business nature, it can be said, that does not interest, more or less, every kind of railway officer.

Railway affairs have two phases, the mechanical and the speculative. Railway men who have to deal only with the practical are too prone to look at only one phase of the subject. To them a spade is a spade, and nothing more. Its association with the grave-digger or the railway contractor does not clothe it with suggestions, or surround it with speculative fancies. In the same way we get to look upon the selling of tickets as just as much a mechanical matter as we do the stamping of them, while as a matter of fact the relation that this operation sustains to the public, and the manner in which the latter look upon it makes it necessary to carefully study and arrange every detail connected with the operation. So it is with the handling of freight, the manipulation of baggage, and all the other innumerable affairs of railroads where the public come directly in contact with the machinery of the carrier. Moreover, it is necessary for officials of all classes, in order to comprehend the value of particular things, that they should understand their particular importance and the relation that they sustain to other interests. It is the purpose of this chapter to explain these things so far as possible within the compass that can be given to the subject. If we would secure the highest efficiency in a department or business, it is necessary that every subordinate connected with it should be able to view its affairs from the standpoint of the responsible head. When they are able to do this they act with greater intelligence and unanimity, and can accomplish results not attainable where such co-operative intelligence is wanting. This purpose it is sought to achieve not

only in this chapter, but in the book generally, and in so far as this object is accomplished the object of the author is achieved.

IRREGULAR PRACTICES AT STATIONS—THE GOOD INTENTION OF AGENTS.

It is the duty of traveling auditors to report any unauthorized or irregular practices indulged in at stations. This does not refer to acts wrong in themselves but committed ignorantly or in good faith, believing them to be right; but it embraces all sins of intention and neglect, of omission and commission, everything of a reprehensible or culpable nature; acts that disqualify persons for the exercise of offices of trust, collusion, using the employer's funds, falsifying the accounts, cheating the patrons of the company or defrauding or terrorizing them in any way. In fact, it embraces all the acts of a willful nature that are harmful to the company or that are likely to bring it into disrepute. The intentions of men must be carefully scrutinized. It is not enough that an act may seem to be criminal; it must be so in fact. Where so great a number of men are employed, and where such vast differences of temperament and degrees of understanding exist, the most surprising misapprehensions will be found as to what is proper or otherwise. It would hardly be supposed that a capable and honest agent could by any possible processes of reasoning convince himself that he might with propriety cash the time certificates and vouchers of his employer with his (the agent's) personal funds and charge a commission therefor; yet such things have occurred and will occur again, not generally, but in special instances here and there, and always to the scandal of the company interested. An upright man would hardly do such a thing if he supposed it was going to bring discredit upon his employer or himself. That is apparent. Personal interests cloud the understanding of men, and too often render them incapable of judging unprejudicedly of acts that under other conditions they would be quick to condemn. It is not wise perhaps to place undue faith in the good intention of those whose acts belie such expression. Nor, for the reason stated, is undue haste to be exercised in placing an unjust or severe construction upon such acts. In matters of bookkeeping every account is presumably wrong until it is proven to be right, but in all things that affect the character and standing of men, it is a maxim of law that they should be considered above reproach until they are proven to be otherwise. It is upon this last-named basis that the employés of railroads are to be considered and treated.

THE EMPLOYMENT OF INEXPERIENCED AND UNSKILLFUL AGENTS UNAVOIDABLE.

The business at many stations does not warrant the employment of skilled accountants. In many cases the labor is really greater than the agent can handle and at the same time observe all the technical requirements of the service. It is also unavoidable that much of the work at stations should be done in a manner that a skilled accountant would justly term rude. Shortcomings of this kind must not, however, be criticised too severely. The intention of the agent is to be considered, and the widest possible distinction must always be made between errors and omissions that result from inexperience or lack of education and those resulting from carelessness, neglect or design. Those disposed to do right, no matter how far short they may come of reaching that standard, must be treated with the greatest gentleness and consideration. In the majority of cases, if properly instructed and guided, they can be made to perform their duties satisfactorily. On the other hand, the indifferent and vicious, who would make a pack-mule of the company, should be treated according to their deserts. The Traveling Auditor should be the good genius of those who are well intentioned, but who are unfortunately lacking in facility, either through ignorance or inexperience. He visits them from time to time, and balances their accounts or puts the books and affairs of the station in shape. He will find much to vex him in these periodical visits. The instructions that he had previously given will only be partially fulfilled, many new cases of complaint will have arisen and little or no progress will seemingly have been made. He should, however, accept these disagreeable experiences good-naturedly, and on deavor, by what he says and the way he says it, to stimulate the agent's ambition to study the requirements of the service and to perfect himself in all the details appertaining thereto.

THE CORRECTION OF ERRORS AND OMISSIONS—THE VALUE TO A COMPANY OF HAVING THE WORK DONE PROPERLY.

In all matters that relate to accounts nothing can be said to be right until it is proven to be so by careful investigation. There can be no supposition in any given case. Nothing can be assumed. Every calculation, every quantity, rate, extension and amount, and all footings must be carefully gone over a second time in every instance, and, whenever possible, the examination must be made by a second person. All returns and reports made at stations must be systematically examined at headquarters. Wherever errors are discovered notice must be sent of the same to all those whose accounts are affected thereby. These notices of corrections must not be accepted as right until they, in their turn, are proven to be so by careful scrutiny. The absolute correctness of all forms of accounts, and the results derived therefrom, are capable of demonstration if proper patience and skill are exercised. In the case of railroads the results involved are so momentous that there can be no conceivable circumstance where an officer or employé can be justified in presuming that an account rendered to or by him is right without investigating to ascertain whether it is so or not. Doubtless many, perhaps the bulk, of the state-

ments and returns are correct, but it would be culpable negligence to assume that they were right without first demonstrating it. Every statement or account that an agent receives, whether from another agent or from an officer, should be carefully examined by the person receiving it. In the same way every statement or return rendered to an officer should be subjected to the most careful and intelligent scrutiny. In this way definite assurance is gained; correctness achieved, responsibility secured, and the *esprit de corps* of the service maintained at the highest point. Without general and systematic examinations, negligence, carelessness, and other still more objectionable practices would quickly creep into the service. When an error is discovered, no matter what the nature of the error or account may be, it should be righted forthwith. The correction of a mistake is not a thing to reflect over or speculate upon. It is something to be done instantly, and in the case of accounts it should be so thorough and careful as to reach all the various books, papers, statements and returns that are in any way affected by it. In all cases of doubt as to whether a presumed error is so or not, reference should be made to some authoritative source. The making of corrections, like the giving of advice, may be well meant and yet may be erroneous; agents and others must, therefore, exercise good judgment in examining and acting upon notices of mistakes, real or supposed, in their accounts. It is very important, in order to preserve the harmony and continuity of accounts at stations and elsewhere, that care should be exercised in making corrections to follow the error through all the books and papers affected by it, making notations and explanations in every case so clear and full that there can never be any doubt about the matter should it ever come up again. There is nothing so cheap as ink and words, and an accountant who attempts to economize either in writing up his books or in correcting the same, makes a mistake discreditable to himself and fraught with danger to his employer.

THE DISPOSITION TO ISSUE GENERAL ORDERS AND CIRCULARS—WHEN THEY ARE ADMISSIBLE AND WHEN NOT—HOW THEY SHOULD BE FILED FOR PRESERVATION.

The disposition is strong, when anything goes wrong, to assume that it is general—a constitutional disease rather than a local ailment—something that is not confined to an individual, but which the whole community participates in. The railway official, as such, is no exception to this rule. When anything transpires that does not meet his views, the impulse is always strong upon him to correct it by a general order, issued broadcast, and addressed to all. This habit, when wisely restricted, accomplishes much good, but when unduly indulged in, is harmful. A circular or general order should never be issued except in those cases where its observance is assured. To issue it under other circumstances is to encourage insubordination by suggesting it. No fault of a special nature should receive general consideration. Personal sins of omission and commission must receive special attention if the wrong is to be corrected and the person committing it be benefited thereby. It is partly in consequence of a disposition to visit the sins of the unjust upon the just, and partly in consequence of the volume and multiplicity of the things, material and immaterial, that he is called upon to observe, that incline many otherwise good agents to view with languor, if not with indifference, the various orders of a general nature that are sent them from time to time. Neglect in this respect is hardly considered an offense. The order or circular is glanced over as closely as time will permit and is put away, quite likely mislaid, covered up with papers or dust, and is thus lost and forgotten. This is especially the case in regard to the circulars that outline new methods of business or accounting, and that are more or less complicated in their nature. Orders of this kind require much labor and thought to be fully understood, and the agent in many instances does not find it convenient to give this, especially as he has an abiding faith that he will be set right should he go astray in any particular. The number of circulars and letters of instruction that the average agent receives is prodigious, and however zealous he may be at the start to execute the slightest wish of his employer, his zeal too often grows dull with time and frequent usage. In view of the indifference (reasonable in itself and in many respects justifiable) that in many cases attends the reception, custody and execution of the circulars and letters of instruction that flow into every station in never-ending stream, it becomes necessary to adopt such orderly and effective measures as may be necessary to secure their preservation for use when required. The constant changes that occur at stations render this especially necessary. These circulars in cases of new agents not only afford them instruction but are matters of historical interest and are necessary to afford them the information of a general and special character required by their position. Books should therefore be kept at every station in which these circulars must be securely fastened in the order of their receipt. It is the duty of traveling auditors to see that this work is thoroughly and systematically carried out, that the station force is familiar with the various circulars and instructions that have been issued, and that they observe them in due form. All changes and orders in regard to tariffs should be attached to and become a part of the tariffs proper, so that in studying or referring to the latter they will not be overlooked or forgotten. Notices of this kind can hardly be classed as circulars. All circulars proper, however, whether printed or otherwise, and all letters of instruction of a general nature or explanatory of the methods of business or accounting should be filed in the record book for preservation.

STATION RECORDS, THEIR VALUE AND PRESERVATION. The station books and papers of a company are valuable for various reasons and are intended to serve different purposes. In the first place they present a classified and complete record of the business, written up in the order in which it occurs and in a manner easily to be understood. These records are necessary to the agent to enable him to write up his accounts, and afford, moreover, evidence of the reliability or otherwise of his action. In the event any question comes up in reference to the business done by him, or the methods he has pursued, the records are intended to afford any information required. Records of goods transported and the acknowledgments of the delivery of property are especially valuable, and should be preserved with scrupulous care until all inquiry in relation to the business they cover has ceased and until any possible claims for damages in connection with such business have become outlawed. The cash book and the record of overcharges are especially valuable. The ticket and baggage books, records of drafts, details of cars handled, copies of returns, evidences of remittances and other statements and records are all in their turn of particular value and their preservation is both important and necessary. All old records, books, papers, statements and accounts must be filed away where they will be secure from molestation or harm and yet easy of access. When they are no longer of use at the station, the company will make such disposition of them as it thinks proper, and they must not be sold or otherwise disposed of except under the direction of some authorized officer.

An English Railroad Shop.

The *Engineer* contains an account of the Midland Railway Works at Derby, from which we extract and condense the following:

The works are very extensive, the whole of the heavy repairs of 1,700 locomotives, 4,000 vehicles used on passenger trains, and most of the repairs on 100,000 freight cars being executed here, while many new engines and cars are built at the works instead of being purchased from contractors. The Midland Company employ in all about 46,000 men of all grades, 10,000 being in the locomotive department, which is distinct from the car department.

All metals, oils, paints and other materials used in the works are analyzed and tested in the laboratory, a large and well-appointed department. A clear saving of \$15,000 per year has been made by the substitution of the red-brown oxide of iron paint for the green paint hitherto used for the locomotives. Though green is the color used on the majority of English roads, red-brown costs less, is more durable, and retains its color better and does not show the oily dirt so quickly.

The chairs for the bull-headed rails* are molded by hand. With boxes or flasks about 2 in. wider and longer than the exterior dimension of the chairs, the quantity of sand used is not large. The iron pattern is laid on a board, the flask placed round it, a little facing sand put in, covered with body sand with a shovel, the handle of which is formed into a rather large pegging rammer. A little more sand is thrown in, flat rammed with the shovel, and scraped off with it. The operation is thus wholly of the ordinary kind, but it is performed so quickly, the top part of the mold being only a struck top, that the cost of the molding is but 50 cents per ton of chairs. The pattern easily leaves the sand, and the loose pieces by which the jaw is formed leave without any trouble. This cost of molding does not leave much room for economy by machine molding, and it is argued that when the foundry is small and the cost of keeping machines in order taken into account, the possible saving is not material. A new foundry is, however, being erected, chiefly for chair and fire-bar making. At present from 230 to 250 tons of chairs are made in the existing foundry per week.

Practically the whole of the engines on the Midland are inside connected. The locomotive cranked axle is placed in a molding box, and the four eccentric sheaves cast upon it in their proper positions. The eccentric sheaves are molded in a box provided with guides for molding them with the pattern in the right position, so that when the real crank shaft is afterwards put into the box, it is held with the cranks at the proper angle with respect to the longer eccentric diameter of the sheave to be cast on. The shaft is placed in a vertical position, the part which is to receive the sheave having been only rough turned. This gives the sheave sufficient hold when it has shrunk on. This method has been adopted about a year, and so far with success, although some fear of blown castings, chill next the shaft, and of bursting after the sheaves were turned up, might reasonably have been entertained, especially as the shaft is not heated at all when put into the mold.

Steam riveters are used in the boiler shop, and light suspended machines, driven by flying cotton rope from the shafting, are employed for tapping and screwing in the firebox stays. The screwed copper stays are reduced in diameter at that part which is between the plates when screwed in, so that the time occupied in screwing them in is lessened, and the stays are not so liable to break. At another part of the shop a simple machine fixed to a wall is used for facing those parts of the boiler upon which the gauge glass and other fittings have to be fastened. The joint is thus quickly and easily well made. Copper fire-boxes and brass tubes are used. The water used on the greater part of the line makes it impossible to use iron tubes. The holes in the boiler tube plates are drilled with large twist drills guided by large thick templates, but twist drills are not in general use yet. The fire-box roof bridges are of wrought iron, and are drilled from the under side about 2.5 in. deep, and tapped by the same machine. The stays are screwed into them from within the box. About 90 of these roof bridges are placed together in one large planing machine, which shapes the ends where they rest on the vertical plates of the box.

In the machine shop several emery-wheel shaping machines are used for shaping and finishing the surfaces of the guides for the axle-boxes of the locomotives, slide-bars, and other chilled or hardened parts. The use of these machines permits the use of chilled cast-iron where so very durable and cheap a material could not otherwise be used, and the extent to which this class of machine is now used is worthy of remark. Many engines have wrought-iron case-hardened axle-boxes, split in two halves vertically, so as to permit of the horizontal wear due to the pressure of steam on the pistons being taken up. In a separate shop for case-hardening the cooling tanks are provided with two screws, one at

*The double-heaped reversible rail formerly universal in England has been nearly superseded by the bull-headed, which is not reversible, the upper head being considerably the larger, to allow for wear.

either end on vertical shafts, by which the liquid is kept in rapid circulation. This secures a much better result than can be obtained when the water is not properly kept in motion. Tilghman's sand blast process is used for sharpening files, and cleaning castings which have to be turned, such as the inside of axle brasses, to which it is necessary to make the bearing metal adhere.

In the turnery are groups of lathes of different sizes, four and six in a group, contained in one standard with overhead secondary shafts. In this one turnery are 450 hands. Special machines are used for drilling through the bodies of the wheels into the tires, tapping the holes and screwing therein the studs by which the tires are prevented from moving. Cast iron is used for the bodies of the wheels of switching engines.

The erecting, turning and machine shops are each 450 ft. long, and the former is provided with 25-ton traveling cranes worked by constantly running endless cotton ropes. The shafting in these shops is driven by fine wall engines supplied with steam from locomotive type boilers at a pressure of 140 lbs. per square inch. The engines are coupled direct to the shafting, but steam is exhausted at rather a higher pressure than would agree with the notions of most constructors of economical engines. Some heavy express passenger engines of a new type are in course of construction. The two inside cylinders, 19 in. by 26 in., are made in one casting. The four coupled wheels are 84 in. in diameter on tread, and are placed at 108 in. centres. Some new main line mineral engines weighing 108,000 lbs. are also being built.

An area of more than 14 acres is covered by the car shops, built in 1878, and fitted with the best modern plant. A very large stock of timber is kept on hand, as no artificial system of seasoning is used. The main wood-working machine shop contains 69 distinct machines, all made by Robinson of Rochdale, and measures 320 ft. by 200 ft. The shafting and belts are under ground in a specially arranged basement, which also receives all saw-dust and waste through suitable chutes placed beneath the machines. Various special machines are used for making the wood-centre Mansel wheel, used under the passenger stock, and for making the wooden keys, treenails, etc., used by the permanent way department. The smithy, iron-working machine shop, car erecting, upholstery and paint shop form separate buildings connected by traverses. Large quantities of American oak are used. The shaped frame pieces for cars are stored in a large shed built for the purpose. The ends of these pieces of converted timber are coated with white lead paint, as a means of preventing them from drying more quickly than the other parts, and thus causing splitting.

One hundred new passenger cars fitted with the Pintsch light, are in course of construction. The trucks used have no equalizing bar, single elliptical springs being placed above each axle box.

Pennsylvania Railroad Passenger Car Truck Centre-Plate.

The accompanying illustration shows the standard form of centre-plate used by the Pennsylvania Railroad on all its passenger equipment. The details of the construction are so clearly shown that any lengthened description is unnecessary. It will be readily seen that the two plates form a species of ball and socket joint, so that the truck may be tilted either fore and aft or laterally without affecting the body of the car.

Contributions.

The Switching Problem.

PHILADELPHIA, Pa., Aug. 14, 1884.

TO THE EDITOR OF THE RAILROAD GAZETTE:

The following is my solution of the problem appearing in your issue of Aug. 8:

Run the locomotive to *M*, back up and get *R*, and take it to *T*. Push *S* to *B C*, back the engine to *T*, run to *M*, back up and get *S*. Take *S* to *M* and back it up against *R* and *T*. The locomotive and cars are then together at *T*. Run all three to *M*, back up to *B C*, and leave *R* there. Leave *S* on *A B*, in the position originally occupied by *R*, and run to *T*, and up to *B C*. Get *R* and leave it on *B D*, in the position originally occupied by *S*, and run *E* to its first position.

The locomotive still points in the same direction and the cars have changed places, *quod erat faciendum*.

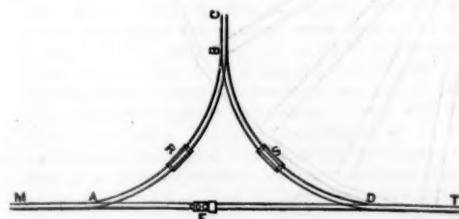
ALAN D. WHITTAKER.

HORNELLSVILLE, N. Y., Aug. 14, 1884.

TO THE EDITOR OF THE RAILROAD GAZETTE:

In answer to the Vermont man's problem, I would say:

Take engine and push *R* car to *B C*, and leave it there. Then take engine and come out on main track, and go in on *D B*, and get *S* car, and push it up to *B C*, and get *R* car



and bring it out, and put it on main track. Then throw *S* car back on *D B*, and get *R* car from main track, and go in on *D B*, and push *S* car to *B C*. Then pull *R* car to the place formerly occupied by *S* car. Then take engine and go out on main track to *A B*, and get *S* car and pull down to place formerly occupied by *R* car, and leave it there. Put engine on main track again, and all is complete.

G. R. KRINE,
Fireman, Susquehanna Division, N. Y., L. E. & W. R.
SOUTH OIL CITY, Pa., Aug. 13, 1884.

TO THE EDITOR OF THE RAILROAD GAZETTE:

Take your engine down *M T*, go up side track *D B* to stock car. Push stock car up to *B C* and leave it there. Bring your engine down side track *D B*. Run it up main track

M T to side track *A B*. Up side track *A B* to refrigerator car. Push refrigerator car up against and couple on to stock car (which I left on *B C*). Bring both cars down side track *A B*, leave your stock car on track *M T* to clear side track *A B*, take refrigerator car up side track *A B* and leave it on *B C*. Take your engine down *A B* to *M T* (where I left stock car), couple on to stock car and put it on track *A B*, where refrigerator car was. Cut loose and take your engine down *A B* to *M T*, run it along *M T* to *D B*, up *D B* to *B C*, where I left refrigerator car. Couple your engine to it and bring part way down *D B* and leave it where stock car stood. Run your engine down *D B* up main track *M T* and leave it where you found it, thus accomplishing the whole thing without flying switches, ropes or turning your engine.

A. V. R. R.

ST. CHARLES, Mo., Aug. 11, 1884.

TO THE EDITOR OF THE RAILROAD GAZETTE:

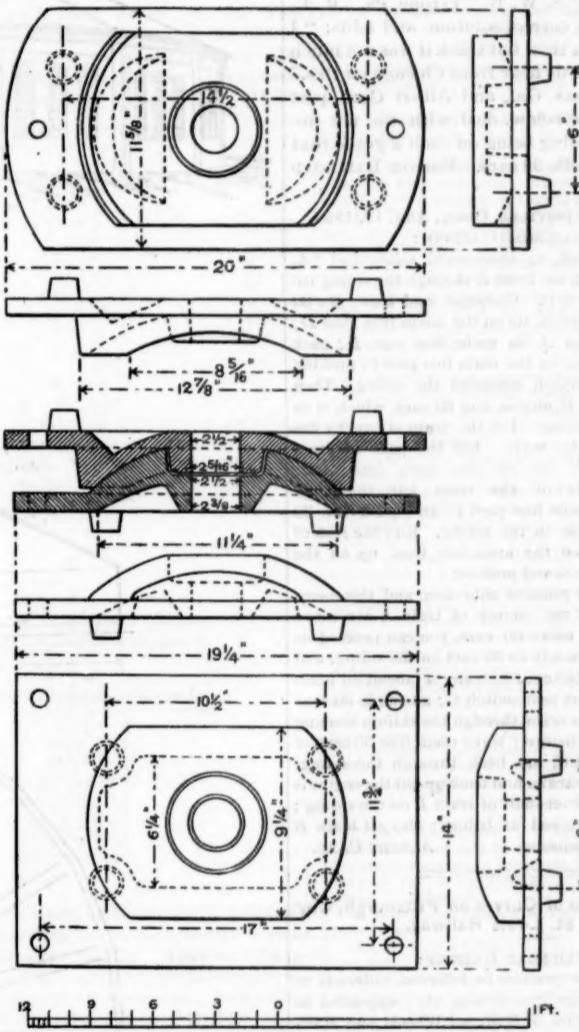
"A. T.'s" SWITCHING PROBLEM.
CLEVELAND, O., Aug. 16, 1884.

TO THE EDITOR OF THE RAILROAD GAZETTE:

A. T.'s problem is solved thusly: Let the east-bound freight leave 30 cars on the main track west of the siding, and run in on the siding with engine and 30 cars. The west-bound freight then goes west until it clears the west end of the siding and shackles on to 30 cars of the east-bound

freight. Then the engine and 30 cars in the siding run east on to the main track. Then the west-bound freight backs in on the west end of the siding, bringing the 30 cars of the other train with it, leaving them on the siding and backing out on the main line, and then going west with the train. The engine and 30 cars of the east-bound freight then back in on the east end of the siding, gets the balance of the train and goes on east.

How does "A. T." turn an engine in passing a siding as per his conditions? Can't do it, out our way. Here is another for the boys, somewhat similar:



Passenger Car Truck Centre-Plate.

and leave *S* on *B C*. Then come out on main track, enter side track *A B*, hitch on to *S*, pull up and leave *S* where *R* stood. Then come out on main track, hitch on to *R*, then enter side-track at *D*, and leave *R* where *S* stood; then come out on main track and leave engine where it originally stood.

D. SHULTZ, Sr.,
St. Charles Car Co.

ST. PAUL, Minn., Aug. 12, 1884.

TO THE EDITOR OF THE RAILROAD GAZETTE:

The problem of the locomotive runner "from the breezy hills of Vermont" is a little out of my line, but does not seem to be a very difficult one.

E goes to *A*, backs *R* on to *B C* and leaves her there; comes back on to *M T*, goes on to switch *D*, pushes *S* down to *R* and couples on, pulls both cars back up *D* on to *M T*, leaves *R* at *M*, takes *S* back down *D* and leaves her at *B C*, comes back up *D* and on to *M T*, backs down *A* and brings car *S* up to where *R* was; then comes on to *M T* again, couples on to *R* (which has been standing at *M*), takes her back to *D*, runs down with her to where *S* was, leaves her there and comes back light on to *M T*, and takes her first position. Next.

JNO. BAKER,

St. Paul & Northern Pacific Railway.

P. S.—Of course it can be also done by *E* going to *D* and pushing *S* down to *B C*, and so on.

[We have received several other replies which involve

Siding will hold 35 cars and engine. Thirty-five empties, not shackled, are standing on it. The problem is to pass two freight trains of 35 cars and engine each, going in opposite directions, without shackling up the empties in the siding.

W. C. L. C. C. C. & I. R.

RICHMOND, Va., Aug. 16, 1884.

TO THE EDITOR OF THE RAILROAD GAZETTE:

"A. T." seems to be astonished that the Vermont locomotive runner should be the means of "staggering some brilliant minds," and after solving the Y problem offers one that for simplicity equals anything in the switching line yet propounded.

Let either train cut off 30 of its cars and leave them on the main line; then the engine and balance of the train can either take the side-track, or occupy the main line between the switches. The other train will then run up the unoccupied track far enough to allow the front part of the divided train to pass out in the rear of the undivided train; the latter can then back down and either set the cars left by the other train on the side-track, or leave them on the main line between the switches. Either will do. Then cut loose and pull by the 30 cars. The front part of the latter train can then come back and couple up, thus completing the shift, the trains making but one coupling each.

A switch at only one end of the side-track would complicate matters somewhat. Almost as much so as to get the

engine turned around. "A. T." says they must not be turned in solving his problem.

HIP SING.

Chinese Laundry, Richmond, Va.

LYNN, Mass., Aug. 18, 1884.

TO THE EDITOR OF THE RAILROAD GAZETTE:

The problem of "A. T." contained in last week's *Gazette* may be answered as follows:

Train *A* pulls on to the turnout at *D*, leaving one half of its train on the main line; train *B* passes along on main line and passes the remainder of *A* train ahead of it so as to clear the switch at *C*; *A* passes out of switch *C* on to the main line, and couples to the rear end of *B* train; *A* then goes-ahead taking *B* train with it clear of *C*; *B* engine pulls on to the siding at *D*, and leaves the cars of *A* train there, and passes out at *C*, and couples on to its own train, and proceeds on its way. *A* backs into siding at *A C*, couples to remainder of its own train, and also proceeds. B. B. N.

[We have also received correct replies from Charles E. Brennan, Housatonic, Mass.; D. C. Garrison, Roxbury, Conn.; "W. W. T." Hudson, N. Y.; "E. G. P." Chicago; "D. P." Baltimore, Md.; Chas. H. Barnhurst, Philadelphia, Pa.; "G. W. W." and "A. E. S." New York city; "C. E." and "F. W. N." C. & O. R. R.; "I. W. V. L." Brooklyn, L. I.; "W. M. M." Scranton, Pa.; "D. S. Q." N. Y., L. E. & W. R. R., Hornellsville; "A. K." Ottawa, Ont.; M. A. Howe, Center Rutland, Vt.; "S. W. B." Tyrone, Pa. R. I., Boston, Mass., sends a correct solution, and adds: "I did not time myself on this, but think it was not much over 594 seconds. Let us hear from Chicago on this."

"F. W. S." Savannah, Ga., and Albert Carr, part of whose letter we give below, deal with the not improbable case of the siding being on such a grade that one engine cannot handle 90 cars.—EDITOR RAILROAD GAZETTE.]

COLLINSVILLE, Conn., Aug. 18, 1884.

TO THE EDITOR OF THE RAILROAD GAZETTE:

The following is, I think, an economical solution of "A. T.'s" problem: Pull the train from *B* through the siding till the rear car is past switch *D*. Uncouple and leave the 30 rear cars on the siding; back up on the main line past *D*; then run the train from *A* on main line past *D*; back through the siding and out on the main line past *C*, pushing the 30 cars of train *B*, which occupied the siding. Then run the part of the train *B*, engine and 30 cars, which is on the track *D B*, on the siding. Let the train *A* run by the siding and proceed on its way. Let the part of train *B*, on the siding, run out on the main line *A C*; couple on the 30 cars of the train left there by train *A*; back up on main line part *D*, and push the 30 cars in front of the engine on the siding. Run the rest of the train by the siding on the main line, back up on the siding, couple on its 30 cars and proceed.

In this solution train *A* remains unbroken, and this seems to be the quickest way if the engine of train *A* can move 90 cars. If it can only move 60 cars, you can proceed as follows: After train *B* has left its 30 cars on the siding, and backed up beyond *D*, as before, run train *A* ahead on main line till the rear car is just past switch *C*; uncouple 30 rear cars; back the rest of the train through the siding, pushing the 30 cars of train *B* as before; leave them (the 30 cars of train *B*) on main line *A C*, run back through the siding, couple on the rest of your train, and back up till the engine is past *D* on *C D*; run your one-half of train *B* on the siding; run train *A* ahead and proceed as before; also get train *B* in shape as in preceding solution.

ALBERT CARR.

Elevation of Outer Rails of Curves on Pittsburgh, Cincinnati & St. Louis Railway.

TO THE EDITOR OF THE RAILROAD GAZETTE:

In the table giving the practice in different railroads in laying track, locating frogs, guard-rails, etc., appended to the paper, on the "Relation of Railroad Wheels and Rails to Each Other," which was read at the late convention of the Master Car-Builders' Association held in Saratoga, it is stated that the elevation of the outer rails on curves above the inner rails on the Pittsburgh, Cincinnati & St. Louis Railway "is left to the judgment of the men in charge of the track." This statement, I am informed, does not fairly represent the practice on that road, and does not mean the ordinary section-men, as might perhaps be inferred, but the engineers of maintenance of way on the different divisions on that line, who are guided by the general rule that "on portions of the road when passenger trains make a speed of 40 miles per hour, an inch of elevation should be given for each degree of curvature. At points where the speed named is not attained, the elevation should be reduced in proportion to the diminished speed of the trains."

From the Engineer of Maintenance of Way, and other officers of that road, I have learned that very great care is taken in laying out curves on that line, and that the gauge is widened from $\frac{1}{4}$ in. to $\frac{3}{4}$ in., depending upon the degree of curvature, whereas in the table referred to it is stated that those in charge of the permanent way have no rule for widening the gauge on curves on main line.

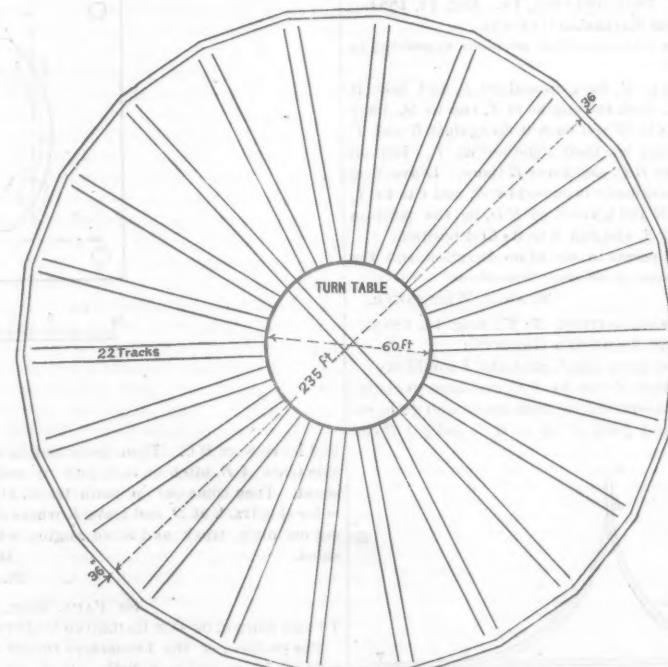
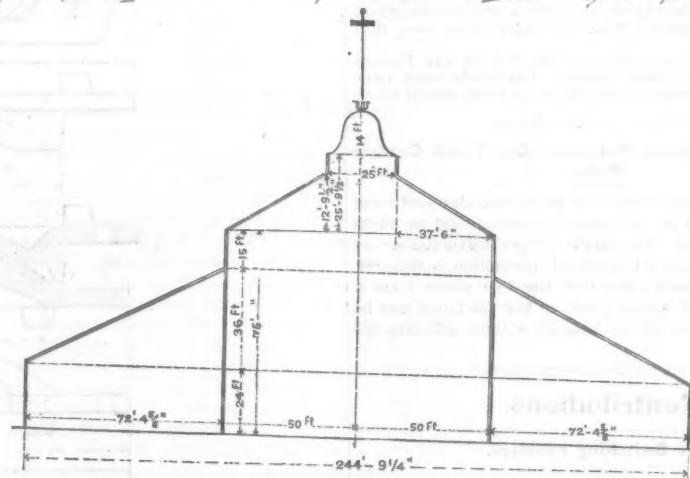
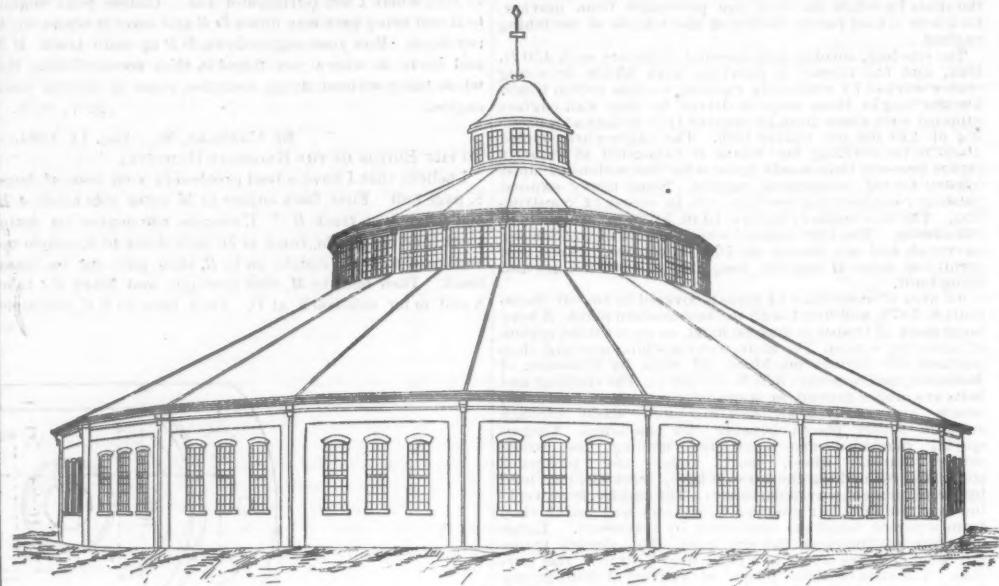
The errors referred to are due to the fact that the circular or inquiry which was sent to various officers of railroads to get the information which is embodied in the table was answered by some one who apparently was not entirely familiar with the practice of the road, and also because it was not answered by other officers of the road, to whom it was sent, and who are, or should be, entirely familiar with the practice of the permanent way department on that line.

M. N. FORNEY.

Mount Clare Car Shop.

The accompanying illustrations show the external appearance and general arrangement of one of the finest shops of its kind in existence. It was completed last February and was built by the Baltimore & Ohio Railroad Company at its principal repair shops at Mount Clare, Baltimore, Md. The external walls are built of hard brick, and the roof is slated. The space between the tracks is paved with Fall's Road

supported by wrought-iron pillars, each composed of two 9-in. and two 12-in. channel irons riveted together in the form of the letter H. These channel irons were rolled at the Baltimore & Ohio Railroad Co.'s rolling mills at Cumberland, Md. Wrought-iron pillars can often be used very advantageously in lofty shops. They take up less floor space than cast-iron columns, can be made considerably lighter and are more easily transported and erected, and in certain cases these advantages render the wrought-iron



Mount Clare Car Shop, Baltimore & Ohio Railroad.

stone, resting on a bed of salt-water sand, rammed down tight.

Some notice of this building has already appeared in these columns and to avoid back reference is quoted below:

The building is divided into 22 stalls, and as it measures 235 ft. diameter inside, the longest passenger or sleeping cars can be easily accommodated. The whole building is completely roofed in, and is very well lit by the central lantern or clear-story, 100 ft. in diameter. The roof rises sharply from the outside walls to the base of the lantern, and is carried on lattice girders, which, with the lantern, are

columns the cheapest. The lantern is trussed, a precaution which is very generally thought unnecessary, the sloping sides being treated as struts, whose thrust is counteracted by a ring at the base of the cone.

The great height and size of this remarkably handsome structure are enhanced by the tasteful manner and light color in which the interior is painted. At first sight, it might be thought an extravagantly large and costly structure to contain only 22 cars. But a little figuring will show that this is not the case. A rectangular building in three bays with a traverser down the centre aisle, and stalls right

and left, enables each car to be moved without disturbing any other car, and in that respect gives similar advantages. A traverser, however, is not so easily moved as a turn-table, and would require a larger number of men to work it. The circular shed under notice gives a minimum clear space between cars of about 5 ft. 9 in. A comparison with a rectangular shed able to accommodate the same maximum length of car and giving a clear space of 6 ft. between cars shows that the rectangular shed requires the smaller roof to cover it, the area being 9 per cent. less, while the four walls are 7 per cent. longer than the circular wall of the turn-table shed, each, of course, having the same number of stalls. It would therefore appear that when it is a question of housing about 20 cars there is little difference in the cost, while the circular form gives more available space for benches, etc., as a turn-table occupies a smaller area than traverser, and therefore less room is wasted. This difference is more considerable than might be supposed, and the circular form gives more working floor space, in the proportion of about 13 to 8, when both sheds are full of cars and the space occupied by the turn-table in one case and the traverser-bed in the other is treated as unavailable.

Nut Locks and Rail Joints.

We have received the following from the Engineer of Morgan's Louisiana & Texas Railroad in response to our circular of June 26 on nut locks, even or broken joints and crossties.

"A nut lock for rail joints, to be efficient, must not only

"4. Ties must be hewn on four faces, and must be made of trees of such size that sap-wood will appear at the corners only, and it must not extend over 1½ in. across any one face.

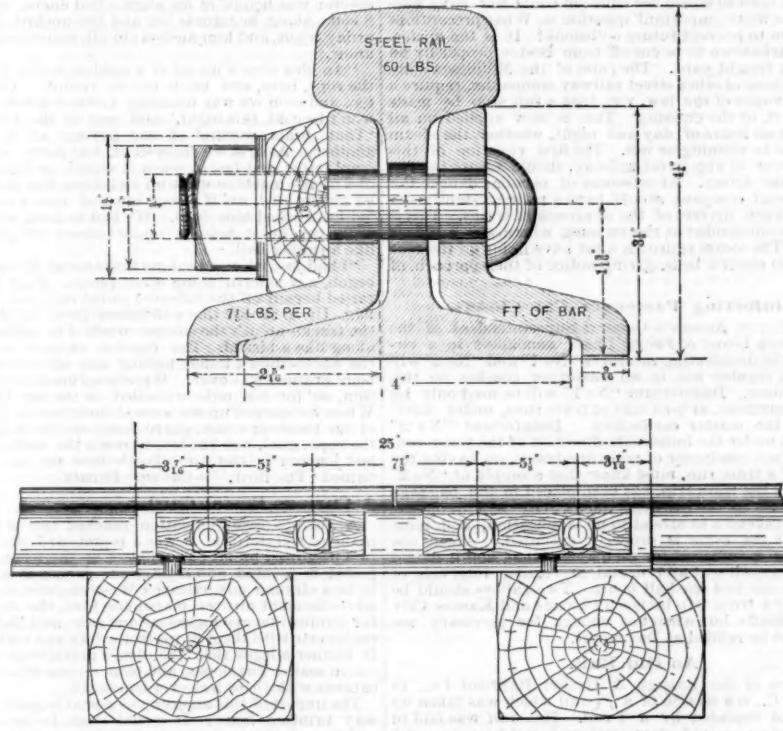
"5. Ties must be piled with ends perfectly even and must be so placed that they may be thoroughly inspected.

"J. KRUTTSCHNITT, Engineer and Superintendent."

The accompanying illustration shows the standard joint used for 60-lb. steel rails. The holes in the web of the rail are circular and 1 in. in diameter, while the holes in the fish-plate are oval, measuring 1½ in. by ¾ in.

An Italian Passenger Engine.

The Upper Italian Railroad has lately completed some of the heaviest, if not the most powerful, passenger tender engines in existence. An engine of this class is now shown at the Turin Exhibition. It was built to convey passenger trains on a new line now being constructed between the plains of Lombardy and Genoa. The gradients crossing the Apennines will range from 64 feet to 84 ft. per mile, and it is considered desirable to run passenger trains weighing 290,000 lbs. up these grades, at the rate of 25 to 28 miles an hour. The same engine is also required to run at a high speed on the more level portion of the line. A ten-wheel engine has been adopted, the cylinders, however, being placed between the hind truck wheels and the front drivers. The latter are 66 in. diameter on tread, and the cylinders are 18.7 in. diameter and 24.4 in. stroke. The tractive power is thus 129.3 lbs. per pound average pressure in cylinders. The engine weighs in working order 118,720



Standard Rail Joint, Morgan's Louisiana & Texas Railroad.

prevent the nuts from turning, but it must also take up the play produced by the constant passage of trains between the fish plate and rail, and between the nut and fish bar, in other words, the lock must be elastic. Where cost is not considered I think the improved Verona made of steel about ½ in. thick the best nut lock I know of. Their cost must necessarily affect their use on many roads. The lock shown in the accompanying illustration was first used by us about three years ago, since which time we have equipped 220 miles of track with it. It is efficient and cheap. The iron washers are trade washers costing ½ cent apiece. The cost of a joint complete is then 1.8 cents. The durability of the lock is limited to the life of the pine wood of which it is made, and in our climate will average three to five years. The first experimental lot of wooden washers used by us have been in use for three years, costing little or nothing for renewals, and our subsequent experience proves that loose nuts and rattling plates are almost unknown where they are used. The track walker easily maintains the joints in perfect condition, where formerly we had two or three men tightening bolts.

"We lay our track with broken joints, believing that to be the better plan, as it brings the weak joint opposite a strong part of the rail, and the oscillations imparted to a coach on poorly kept track are by us considered less objectionable and disagreeable with broken than with even joints. Our road is sand ballasted.

"All of our ties are of cypress, 9 ft. long, on highland, and 10 ft. long in swamps and lowlands. We occasionally use yellow pine in sharp curves in yards and switches. Our specifications for cypress crossties is as under.

"1. Length, 9 or 10 ft., according to orders given. No variation allowed.

"2. Breadth, 10 in.

"3. Thickness, 7 in.

lbs., and the whole train would probably weigh about 482,000 lbs., which would give on the steepest incline a resistance due to gravity alone of 7,712 lbs. Allowing 8 lbs. per ton for axle friction, and all resistances due to curves, speed, etc., the total resistance to be overcome would be 9,640 lbs. This would require an average pressure of 74.5 lbs. per square inch on the pistons. This is a somewhat high pressure to maintain at a speed of 25 miles an hour, and will severely task the steaming powers of the boiler. The indicated horse power required is 64.8, which would be probably easily obtained at a higher speed with the engine working more expansively and consequently using less steam per indicated horse power.

The engine has a large copper fire-box and combustion chamber, and 202 brass tubes 1.97 in. diameter outside, and 12 ft. 6 in. long between tube-plates. The fire-box roof is stayed to the wagon top by direct stays, and the ends of the boiler are stayed to the sides by gussets, no longitudinal stays being used. The steam dome is placed close to the smoke-box tube-plate, and carries an ordinary lever safety valve. Two lock-up Wilson-Klotz safety valves* are, however, provided in addition.

A petticoat blast pipe is used, and the top of the chimney can be shut by a door, as is usual on French engines. The smoke arch is provided with a shoot and flap valve for dumping ashes.

The valve gear is outside, the eccentrics being placed on pins on overhung crank arms projecting from the crank-pins proper.

The cab has an iron front, and a wooden roof, and is open at the sides. The springs for the driving-wheels are placed beneath the axles, and are equalized between the main and hind drivers. All springs have india-rubber cushions interposed in the links, which are in compression.

The two glass water gauge cocks are coupled together and can be worked by a handle at some little distance from the

*An illustration of this form of valve will be found on page 724 of the issue of the *Railroad Gazette* for Dec. 23, 1881.

gauge glass. Should the latter break the engineer has a chance to shut both cocks at one operation without being scalded.

Two non-lifting Friedmann injectors are attached to the lower part of the footsteps. They can thus be kept cool when running by the current of air, and can be easily taken down and examined if furred up with scale. A somewhat similar arrangement of injectors and glass water-gauge cocks will be found in our description of an English express engine at pages 427 and 452 of our issues of August 13 and 27, 1880.

We give below a few of the leading dimensions of this engine:

Total wheel-base.....	23 ft. 9 ½ in.
Rigid wheel-base.....	12 " 39 ½ "
Wheel-base of truck.....	3 " 11 ½ "
Diameter and length driving-axle journal.....	7 ½ in. × 9 ½ "
Diameter and length truck-axle.....	5 ½ " × 9 ½ "
Diameter boiler barrel inside.....	54 "
Length fire-box casing.....	98 "
Thickness of plates, fire-box casing and barrel.....	¾ " bare
Working pressure.....	147 lbs. per sq. in.
Heating surface of fire-box.....	164 " ft.
Heating surface of tubes (inside).....	1,171 " "
Total.....	1,335 "

Car Accountants' Association, Convention.

The following completes our condensation of the official report of the convention of this Association:

DIVERSION OF CARS.

1. What is the experience of roads using the gummed label? What advantage, if any, over the ordinary card? Is their increased use an evidence of their meeting the requirements?

Mr. KEESBERRY: I believe there are advantages and disadvantages in the use of both the gummed label and large labels.

Mr. FELLOWS: The gummed label has given us more satisfaction than any other. They are not washed off by storm but it is hard work to get them off after they have done their work. They cannot be removed with a wet sponge, but must be scraped and defaced.

Mr. KEESBERRY asked if the sponge froze in winter.

Mr. MOOR: The gummed label has given entire satisfaction. The only trouble is in getting them off, and where left on the car it may cause confusion.

Mr. DAVIES said the gummed label had given entire satisfaction. An iron plate, 4 in. square, painted black, might be provided on every car to which the label could be attached.

Mr. SLEIGHT also approved of the gummed label.

Mr. SQUIRE thought they should be attached at one certain place on the car. They were too small.

Mr. SLEIGHT: The labels are gummed and all ready to be placed on the car.

Mr. DAVIES: The price is about 35 cents per 1,000, and the yardmasters carry them in a box in their pocket, and apply them to both sides of the cars.

Mr. SLEIGHT: The card should be placed under the number, so the man is obliged to take the number.

Mr. BAULCH: Our yardmasters card for 10 different roads, and they carry them all in the same box. They are distinguished by different colored labels.

Mr. SPEIGHT: The old label never causes any trouble. The yardmen say they are sufficiently plain.

Mr. TROUT endorsed the above.

Mr. LUCE: For the past few years we have been using cards made of varnished tin. They are not damaged by the weather, cannot be torn off by boys, and are sent back to the same point and are used over 30 and 40 times. They work satisfactorily to us.

Mr. CUSHMAN exhibited a rack for holding car-cards which has been adopted by the New York Central. The rack weighed three pounds and cost nine cents.

Mr. SQUIRE used the old fashioned manilla card.

Mr. SLEIGHT moved the following resolution which was adopted: "That the use of the gummed label is practicable."

Mr. MOOR moved: "That it is not necessary or desirable that cars should be returned (either loaded or empty) by the route they were received, when both time and mileage may be saved by returning them at a more convenient point." Adopted.

3. What advantage has the car chart over the route card now in use?

Mr. DAVIES explained that there were various ways in use, some roads using cards, some books, and some charts.

Mr. KEESBERRY: We are preparing a book instructing all parties as to the proper loading of cars.

Mr. LUCE: We have been using a chart for several years, and prefer it to books, which get lost. The large charts are tacked up in the yardmasters' and agents' offices, and are always ready for reference. We have two kinds, one of cardboard, to be tacked up, and the other of paper, so it can be folded.

Mr. SLEIGHT: We use the book form.

Mr. YARDLEY: Does not the gummed label dispense with the necessity of using this chart?

Mr. EASTMAN: We have a book with instructions to agents to show them where to load cars to, but the route card is also necessary. As to having it in a book form or on a card, is a matter of opinion.

Mr. LUCE: The chart should be used for loaded cars only, and not for the movement of empty cars.

No definite action was taken on the matter.

TECHNICAL.

Locomotive Building.

The Roanoke Machine Works in Roanoke, Va., are now building 9 consolidation engines for the Shenandoah Valley and the Norfolk & Western roads. In addition to these engines orders are on hand for 15 locomotives.

Car Notes.

The Lehigh Car, Wheel & Axle Works of McKee, Fuller & Co., at Fullerton, Pa., have taken a contract to build 200 coal cars for the Lehigh Valley road to carry 20 tons each.

At a meeting of the holders of the mortgage on the Huntingdon Car Works of Blairstown, at Huntingdon, Pa., last week, it was decided to give the firm further time to arrange with their creditors, and to get the works into operation. The bondholders unanimously agreed that it was not best to foreclose the mortgage at present.

The Hicks Humane Live Stock Car Co. has been organized in Chicago with \$500,000 capital stock, to build and run stock cars of the Hicks patent. The directors are: E. A. Hendrickson, H. C. Hicks, Charles E. Parent, St. Paul, Minn.; E. H. Calloway, W. H. Chaddock, Robert Forsyth, George H. Harlow, Chicago.

The Pullman Car Works at Pullman, Ill., have recently

shipped 12 passenger cars and 300 freight cars to the Vicksburg, Shreveport & Pacific road. They are now building 12 sleeping cars for the Baltimore & Ohio.

The Chicago, Rock Island & Pacific shops in Chicago have just finished four new reclining-chair cars for the line between Chicago and Atchison.

Bridge Notes.

The Phoenix Bridge Co., at Phoenixville, Pa., has secured the contract for the erection of a new iron highway bridge over the Delaware River at Trenton, N. J., to take the place of the wooden structure recently destroyed by fire. The contract price is \$648,500. Work is to be begun at once and is to be finished by October next.

The Pittsburgh Bridge Co. has recently received a contract for one of the most extensive bridges ever erected across a railroad in any city. The contract is given by the city of Chicago, and is for a bridge over the tracks of the Chicago & Northwestern road, at Chicago avenue and North Halsted street. The bridge will consist of one span 60 ft. long, three spans 70 ft. long each, one span 71 ft. long, three spans 72 ft. each in length, one span 54 ft. long, and one span 96 ft. long; total length of bridge 707 ft. All the spans will be of plate girder work with the exception of the 96-ft. span, which will be a riveted Warren girder. The weight of the entire structure will be 1000 tons. The contract price is \$100,000, and the work is to be completed by Oct. 31. —*American Manufacturer.*

Iron Notes.

The Pittsburgh Chronicle-Telegraph says that the iron mills in that city are just at present doing very little work. On the whole, work is more slack than it has been for several years. The prospect, however, is much better than the actual condition of affairs, and it is expected that in a few weeks a number of the mills now stopped will resume, while those at work will be able to make a much better showing than at present.

Hunnewell Furnace at Hunnewell, Ky., is in blast and making about 20 tons of iron a day of very high quality. It is a charcoal furnace.

The furnace of the Everett Iron Co., at Everett, in Bedford County, Pa., is completed and ready to go into blast. In connection with the furnace the company has put up 110 coke ovens and has built a narrow-gauge road connecting the iron mines and the coal mines with the furnace, and is building a large number of dwellings for its workmen, and has commenced mining operations on a large scale. A considerable supply of ore, limestone and coke has been delivered at the furnace ready for a start.

La Grange Furnace, at Stripling, Tenn., has recently been rebuilt and is now in blast. The furnace was first built in 1832 and was rebuilt in 1850, and the present furnace stands on the old foundation. The stack is 65 ft. high and 12 ft. bosh, and uses charcoal as fuel.

Manufacturing Notes.

The San Francisco Tool Co. is engaged in making some large special tools for the Union Iron Works, and is also making a large number of centrifugal pumps for erecting purposes.

The Rison Iron Works in San Francisco have a contract for 27 miles of iron pipe for the Spring Valley Water Co. Most of the pipe is to be 24 in. diameter and some of it is 40 in. A large building has been erected specially for this work and special tools have been provided for cutting, punching, riveting and handling the pipe.

Mr. Charles Stewart, of the New York Iron Roofing & Paint Works, has sold the entire interest, including patents, machinery and good will, in the iron roofing business, to the Cincinnati Corrugating Co. That company announces that it has made the purchase in order to meet inquiries for roofing of flat sheets, many of which have come to it in the course of its business in corrugated iron. The Cincinnati Corrugating Co. has now very extensive facilities for furnishing metallic roofing and siding, and can fill orders of any size. The company will endeavor to maintain the high standard which its own product and that of the New York Works have heretofore held.

The Rail Market.

Steel Rails.—The Iron Age of Aug. 21, says: "The market continues in the same feverish condition as noticed for several weeks past. There are any amount of inquiries, and buyers are ready to place large orders, but there is so much uncertainty in regard to prices that there is considerable difficulty in bringing negotiations to a definite conclusion. In a general way \$27.50@\$28 is quoted, but there is reason to believe that \$27 has been shaded for large lots, so that buyers are again reducing their limits and naming \$25 at mill as their best offers. It is not unlikely that very desirable orders might be taken at a shade less than \$27, but ordinarily \$27@\$27.50 would be considered a fair quotation on 1,000-ton lots, and \$27.50@\$28 for smaller quantities."

Rail Fastenings.—There is no change to be reported either in nominal quotations or in the actual condition of the market.

A Small Locomotive.

Mr. A. M. Davison, Agent of the Central Pacific road at Cold Run, Placer County, Cal., has constructed a small locomotive about 33 in. long, including tender, corresponding in all respects with an ordinary eight-wheel engine. Driving-wheels are about 6 in. in diameter; connecting rods of brass; cylinders are brass; diameter of pistons 1 1/2 in., with a stroke of 2 1/4 in.; boiler of copper, with flues and fire-box same as in large engine; wood burner; built of metal—copper, brass and iron; cab of wood; all the proportions of a large engine are preserved. A small passenger coach about 3 ft. in length is attached. A good deal of power is developed by using a small flat-car on which one of his children can sit, and the engine draws them around in fine style. Under a good head of steam the engine will represent a rate of speed of 40 miles an hour of a large engine. Mr. D. was about two years in constructing it, putting in spare time. It attracts a good deal of attention from those of the traveling public who have the opportunity of seeing it in operation. The engine and cars run on a circular track of about 200 ft. in length, having a gauge of 6 in.—*San Francisco Scientific and Mining Press.*

A Heavy Train.

On the night of Aug. 12 a locomotive on the Concord Railroad took a train of 76 stock cars out of Concord, N. H. The engine is an 8-wheel engine with 18 by 22 in. cylinders, and with this heavy train made the run from Concord to Manchester, 18 miles, in 1 hour 15 minutes, and from Manchester to Nashua, 17 miles, in 1 hour 10 minutes, which is considered very good time for so heavy a train.

Fast Time.

Some remarkable time was made on the J., M. & L. Thursday, by the pay-car en route to Louisville. Beginning at Catoctinville the engineer let her out, and time was kept on each mile run for a distance of eight miles. The first mile was made in 60 seconds, the next in 50, the next two in 48 each, the next in 50, the next two in 60 each, and the last in 50. The eight miles were run in a little more than seven minutes.—*Indianapolis Sentinel*, Aug. 16.

In such fine shape are the rolling stock and road-bed of

the Vandalia line that yesterday passenger train No. 7 with 11 cars ran from Terre Haute to St. Louis, a distance of 187 miles, in 4 hours and 15 minutes, making 10 stops between the two points. The train was drawn by engine No. 180 and was in charge of Jake Sachs, engineer, and John Trindle, conductor.—*St. Louis Republican*, Aug. 12.

A Remarkable Boiler Explosion.

The following is from the Wolcott (N. Y.) News: "One of the most remarkable explosions occurred on the Lake Shore division of the Rome, Watertown & Ogdensburg Monday morning (Aug. 11) about 9 o'clock, between North Rose and Wolcott. It was remarkable because of no apparent cause and no loss of life or serious injury. Engine 7 and passenger train, Levi Young, engineer; J. Slattery, fireman, and Conductor Davis, started from North Rose on time to make the morning run to Oswego. When about 1 1/2 miles east of Rose, without any warning, the train running at moderate speed, the boiler exploded with a tremendous crash, throwing the smoke-stack into the air, tearing out the centre of the boiler, throwing the dome and bell over into the fields. The bell was hurled out of sight and has not yet been found. A piece of iron hit the cab window, shattering it and cutting the face of the fireman slightly, but aside from this no one was hurt or injured. The engine and train remained on the track and ran some distance after the explosion. The explosion was heard at a distance of several miles, and the farmers came rushing to the scene expecting to witness a terrible and ghastly sight, and to their great surprise found no one hurt. It was a narrow escape from instant death of the engineer and fireman, the blowing up of the forward part of the boiler being all that saved them."

Grade Crossings.

Judge Russell, as Chairman of the Massachusetts Railroad Commission, has issued a series of recommendations, arising out of the collision at Charlestown between a Fitchburg freight train and a Middlesex horse-car, which occurred July 30. He says: "A great amount of conflicting testimony was received as to the accident, but the weight of testimony and the logic of facts show that the gates were not closed by the gateman as promptly as they should have been. If they had been so closed the collision could not have happened. The more important question is, What precautions can be taken to prevent future collisions? It is the misfortune of Charlestown to be cut off from Boston proper by an intervening freight yard. The rules of the Middlesex company, like those of other street railway companies, require a strict observance of the law, viz., that a full stop be made within 100 ft. of the crossing. This is now applied on all days and at all hours of day and night, whether the steam cars seem to be running or not. The first violation of this rule, on this or on any street railway, should insure the dismissal of the driver. At crossings of peculiar danger the horse railroad company should have a man constantly stationed to warn drivers of the approach of trains. This is specially recommended at the crossing where the accident occurred. The steam railroads must have lights on the rear car, and also electric bells, giving notice of the approach of a train."

Disinfecting Passenger Car Closets.

Mr. H. F. Royce, Assistant General Superintendent of the Chicago, Rock Island & Pacific Road, announces in a circular that the disinfecting mixtures "No 1" and "No 2" will be placed in regular use in all passenger coaches on this company's lines. Disinfectant "No 1" will be used only by the car department, at terminus of train runs, under directions from the master car-builder. Disinfectant "No 2" will be used under the immediate direction of the train conductors. Each conductor of mainline trains, on leaving the terminus of a train run, must know that a supply of "No 2" sufficient for the train trip, has been placed in the baggage car of his train by the car department. He will designate one of his brakemen to attend to its application, and must observe that the same is properly executed. About one tablespoonful is sufficient for each application, and it should be applied to each seat and urinal at regular intervals of from one to one and one-half hours. Two gallons should be sufficient for a train trip between Chicago and Kansas City or Council Bluffs, but when not enough for necessary use the can must be refilled at Davenport.

An Old Rail.

In the office of the Raleigh & Gaston Railroad Co., in Raleigh, N. C., is a section of a T-rail which was taken up in 1853, and replaced by a T-rail. This rail was laid in 1852, replacing an old strap rail, and had been in use 21 years when taken up. It is still perfectly sound and would have stood several years' more service.

New System of Painting Iron.

A process, on a new principle, for protecting iron and steel from corrosion (especially when submerged) has been patented by Mr. F. Maxwell-Lyte, F. C. S. The theory of the process is essentially electrical; and its utility is based upon the hypothesis that the oxidation of iron and steel is much accelerated by, if not wholly due to, galvanic action. The metal to be protected is first coated with one or two primings of an oxide of a metal electro-positive to iron, upon which any of the ordinary anti-fouling or oxide paints may be applied. These latter always contain the oxide of a metal electro-negative to iron; and this oxide will consequently always be reduced, and the iron oxidized in time. The priming employed by Mr. Maxwell-Lyte is composed of oxide of zinc, or magnesia, particularly the latter; and this not only protects the iron, but keeps it from contact with the outer coat. It is claimed that something of this kind has always been used whenever painting of iron has been even partially successful; but that the guiding principle—the use in the first place of a material electro-positive to iron—has been overlooked. Red lead as a priming does fairly well for a time; because though lead is electro-negative to iron, it is only slightly so. Better protection is assured by the use of a distinctly basic material.

THE SCRAP HEAP.

Sheep, Pigs and Spikes.

The other day a railroad man said: "I know a case where some misplaced wool wrecked an entire train, killed half a dozen men and cost the company thousands of dollars. The wool was on a sheep." "I don't doubt it," chimed in one of his listeners: "I had rather run into a tree blown across the track any time, than to run into a sheep. I remember one night on the M. K. & T., just after a terrific storm, I was riding in the cab. We were making 40 miles an hour, at least, and it was so dark we couldn't see 50 feet ahead of us. Suddenly we whirled round a curve, and there straight across the rails lay the trunk of an enormous tree which had gone down in the gale. There was no time to think of stopping, and I was about to leap from the cab, when Jim, the engineer, shouted: 'Sit still, you — fool, and hang on like grim death.' With that he yanked open the throttle, and quicker than I can tell it, the thing was over. There was a pretty severe shock, but the next instant we were flying along the rails and all right. That tree must have been a foot in diameter, but the wheels went through it like a cheese

knife, and you could have split it up lengthwise, and use the sticks for gauging track. Another time I was in a coach on a train that struck a sheep, and we were all in the ditch before you could wink. I never exactly understood why it was until I saw the remains of the engine. Then everything was plain. The wool had become tangled up in the machinery wherever there was a chance for it to catch. The connecting rods were bent and broken, the steam chests exploded and every light piece of metal about the machine demoralized in some way. It was the wool that did the business."

"Pigs are bad animals to hit, too," said number three. "I came over the Vandalia lately, and one of the connecting rods struck the head of a pig who had been caught in a cattle guard and was running his snout up through the ties. The engine leaked steam all the way to St. Louis, and had to go into the shop next day for repairs. Sometimes cattle are rough on a train, and sometimes not. I went through a herd down in Texas one night, and we killed twelve before we could stop, yet never left the rails. On other occasions I have seen one old cow make chaos of a whole freight train. I suppose a spike is about the meanest obstruction you can strike in a track. It is not big enough to be caught and knocked off by the pilot, and, unless the train is going at a very fast rate, it rarely fails to derail it. Of course, all accidents are determined by circumstances, which in some instances may cause destruction and in others prove harmless. You'll find, though, that all engineers have a holy horror of sheep and spikes."—*St. Louis Globe-Democrat*.

The Flying Hand Car.

Our train stopped at a way station; by the side of the track stood a hand car, with the name "The Bird" painted on it. The section boss and his men were there waiting for the passenger to get out of their way.

"How did you come to name your car that?" was asked of the boss, who puffed at his black clay pipe and replied: "That was the result of a incident, your honor. 'Twas a good many year ago, when I was a green' un on the section. One evening I was in hurry to get from the 342d mile post, where we had worked that day, into town. Ye see, I had a gurl' un them days—the same what's now down there in the cabin attendin' to the kids. It happened the track inspector was helpin' of me align a bad curve, an' so when No. 8 come along, he signals her and gits aboard, it being a Saturday night and him anxious to git home over Sunday, ye know.

"An idea struck me all of a sudden, and so I said, 'Get out the rope, byes, and hitch her on behint.' The boys did it, too, and soon we was whizzing toward town. 'The 'tatis won't be cold this night,' said one of the byes, gleefully. 'That beats workin' of our passage all to pieces,' said another. At first we enjoyed it, but purty soon we got to goin' faster and faster, when it wasn't so funny. The handles of the machine went up and down like mad; we had to let go our hold, an' if one of 'em had struck a man of us, it 'ud have killed him dead. We had to hang about the edges of the car, an' it hobblin' up and down an' jumpin' around like a rubber ball.

"I had just whopped out me knife to cut the rope with when, begob, a wonderful thing took place. That hand-car just raised herself off the rails and sailed right out behind like a flag. Up in the air like a streamer, three fut if an inch from the track—an' it's the solemn truth I'm tellin' ye—we flew along like a birr'd. The handles stopped workin', 'cause the wheels didn't touch nothin' but air, an' the danger of bein' brain'd was over. We was a-runnin' a mile a minute thin, an' for six mile we sailed in the air like a balloon. When we slacked up we were so lucky as to hev the wheels of our hand-car come square down on the rails. Then I cut the rope, glad, you kin bet, to reach the end of my first and last journey in the air. That's how my car comed to be named 'The Bird.'"—*Chicago Herald*.

A Curious Postal Card.

A curious communication reached two or three railway managers yesterday. It was a postal card, evidently backed in a disguised hand. The matter on the writing side of the postal is printed, and mysterious jargon it is. It purports to be a circular advertising a Western printing-house. The advertisement assures managers that the firm's facilities for duplication are ingenious and safe, and that officials can co-operate with them in perfect safety and with great profit. It further alleges that the firm's private circulars are sent out in sealed envelopes, and that no one who ever went in cahoots with them was ever convicted.

The import of this anonymous postal is satire on some railway printing house. It would seem to indicate that the authors of the postal suspect that some railway official has been in partnership with printer in an alleged scheme to feather his own nest. "Is it possible, under the present system of auditing accounts, for a railway official to do what the sender of this card insinuates has been done?" was asked of a local passenger agent, to which he replied: "I don't think there is in the business any official foolish enough to try such a thing, for he is sure to be finally found out. However, fraud is possible. For instance, a general passenger agent might buy up the cheapest clerk who sorts the tickets, post him on the numbers of the fraudulent tickets and have him make no return of them, but throw them aside. Then there is the matter of rebates. An official orders some printing done at a certain price, and when the company pays for it the printer will send ar und in an envelope a certain sum to the man that ordered the bill. However, it is a question if accepting a present of rebate can be called doing wrong."—*Cleveland Herald*.

The Conductor at Church.

The humor of this lies in its truth: A gentl-man, conductor on one of the main lines running between two of our prominent Western cities, was one Sunday persuaded to attend church by his cou-in, who was then visiting at his house. The day was unusually warm, and be being very tired, having been in two railroad disasters through the week, fell asleep. The minister waxing warm with his subject, began to shout; and as he finished his sentence with a shout and stamp, the conductor rose at once and shouted, "Put on the brakes, John, quick! we're off the track."—*Harper's Magazine*.

A Railroad for \$48.

It is not very often that one can buy a whole railroad, or at least the whole property of a railroad company, for \$48, but the property of the Toledo, Texas & Rio Grande Co. was sold the other day at Flora, Ill., at sheriff's sale to satisfy a judgment in favor of the engineer who made a preliminary survey of part of the line. The property did not correspond to the somewhat ambitious name of the company and did not include any completed grading, or even any right of way, the whole consisting of a few desks, ink-stands and stationery. The company was organized a little less than a year ago and the flourishing statement was made at the time that it had placed some millions of bonds on the London market.

Broken in Two in a Tunnel.

The Ellenville passenger train in the New York, Ontario & Western R. R. ad. broke in two in the tunnel at Bloomingburg Monday evening. The engine, baggage car and one of the passenger coaches went through the tunnel, which is a mile long and pitch dark, and to the Bloomingburg dep't

before it was discovered that they had left two coaches behind them. The passengers in the cars left behind were very much frightened when the cars stopped in the darkness, and they imagined they heard the way freight coming in upon them. Ladies sat down and cried, thinking that the best thing under the circumstances, and men sat with blanched faces, expecting every moment to hear the freight rushing upon them. Only a few minutes elapsed until the front end of the train was run back and coupled to the other cars, but the time seemed an age to the terrified passengers, who felt very grateful when they saw the light of day on this side of the mountain.—*Post Jerris* (N. Y. Gazette, Aug. 14).

Too Honest to Beat a Corporation.

When the conductor had passed through the front part of the smoker in the Denver train as it pulled out of Crete yesterday afternoon he was called back by a tired looking man with faded terra cotta mustache :

"Do you see any check in my hatband?" he asked.

The conductor looked and confessed he did not.

"D, you remember collecting any fare from me?"

"No, I guess I skinned you; gimme your ticket."

"Now, I suppose," said the tired man, "that most men would have let you go when you didn't notice 'em."

"Yes; can't you find your ticket?"

"But I don't b'lieve in letting a man suffer for a mistake even if it is his own."

"Want to pay in cash? How far are you going?" asked the conductor, filling out a drawback.

"There are a great many people," continued the terra cotta mustache, "who think that it's all right to beat a railroad corporation, but I'm not one of them. My conscience wouldn't have let me rest a minute if I had let you go by."

"Fare to Lincoln's 50 cents," said the conductor with signs of impatience.

"No, I couldn't swindle a blind man," mused the passenger. "I couldn't go to sleep at night feeling that I had something that belonged to somebody else. I couldn't do it."

He dropped a tear, and reaching down into his vest pocket, drew forth a worn and soiled annual pass. He was an editor, but the conductor was a new man and had not seen him before. He made some remarks that left a blue streak behind them as they ran along over the heads of the passengers, and returning the document, passed on through the car.—*Lincoln (Neb.) State Journal*.

A Hint to Employees.

Mr. James Smith, General Traffic Manager of the Wabash road, in a circular just issued defining the duties of the representatives of the freight department, says: "It is expected that each and every one in the several departments will unite heartily in the work and aid each other. There must be no friction. None will be tolerated. When vacancies occur, promotions will be made from the most competent and deserving men of our own line. Remember there is always room at the top, and the officers who have attained the highest rank in the service are those who have worked their way up from the lowest round in the ladder."

Dangers of a Mountain Railroad.

Following the calling of trainmen on the Denver & Rio Grande Railroad seems to be as exciting a business as the most reckless of men could desire. Some parts of the road are about as steep as an ordinary house roof, and the spectacle of trains running away in spite of unparalleled brake appliances is by no means uncommon. Should a train get derailed on any of the common curves sharper than the bend of a mule's shoe the prospect of the train men accompanying the cars over a precipice a thousand feet deep, or thereabout, is nothing remote. Then the precipices are frequently looming above the track to a giddy altitude, and a rock weighing a few tons tumbling down three or four hundred feet upon a train has a demoralizing effect. Numerous other exciting circumstances readily occur to any one familiar with the operating of this line; yet, as if ordinary dangers connected with the running of a road through mountain chasms were not sufficiently trying to human nerves, a new source of peril has just been made public. While a working train was passing through a canon, lately, a spark from the locomotive ignited a box containing giant powder, causing a terrible explosion that disastrously wrecked the train and engine. If trains there carry boxes of giant powder so badly protected there sparks from the locomotive can reach them, the cup of danger appears to be filled to the brim and running over.—*American Machinist*.

He Came to It.

The railroad passenger who leaves from any depot in Detroit must show his ticket at the gate. The idea is to keep dead-heads off the trains and prevent people from making mistakes, but it's a poor day when a dozen kickers don't show up.

Yesterday morning a man with a very, very iron jaw and lots of width between the eyes reached one of the gates with a parcel under his arm.

"Ticket, sir."

"In my pocket."

"Show your ticket!"

"Can't you take my word that I've got a ticket?"

"Please show your ticket."

"Am I a liar?" demanded the passenger.

"Ticket, sir; show your ticket."

"I'll be hanged if I do."

"All right; please stand back."

"Look a-here," said the man with the metal in his jaw, "I'll stay here a thousand years before I'll show my ticket at that gate."

A dozen people laughed at him, but he let the train go out and walked around with his parcel under his arm. He got no consolation for so long two hours. Then a chap with a battered white plaid hat, run-down boots and last year's clothes, slouched up to him, held out a greasy paw and said:

"Partner, put it that! Both of us dead-broke. Both of us want to get out o' here. Both of us got left at the gate. Partner, I'll toss up to see whether you pawn your red whiskers or I spout my old hat for two schooners of beer!"

The wide-eyed man laid down his bundles and kicked the other with such force that he fell flat. When he had picked himself up he walked straight to the gate, exhibited his ticket, and passed through with the remark:

"There it is—there it is! but I'll beat the conductor or die with my boots on!"—*Detroit Free Press*.

A Baltimore & Ohio Excursion.

The third annual excursion of the employees of the Baltimore & Ohio Railroad Co. took place Aug. 13, when three heavily loaded trains left Baltimore for Harper's Ferry. At that point the excursionists from Baltimore were joined by a number from other points on the road and proceeded to Island Park, where the day was very pleasantly passed. This is the third excursion which has been given to employees of the company.

Wrecking Trains in Revenge for Killing Stock.

On the night of Aug. 17, as a freight train on the New York, Philadelphia & Norfolk road was passing over the road in Guilford, Accomac County, Va., it ran off the track,

wrecking the engine and two cars and injuring the engineer and two brakemen. It was discovered upon examination that some malicious persons had taken up several rails from the road. The new road runs through the Eastern Shore of Virginia, which has always been a very remote and isolated region, and a dispatch from Onancock says that it is pretty well proved that the rails were taken up by some adjacent farmers who had had cattle and hogs killed by the cars. The company will take measures to secure their punishment.

ANNUAL REPORTS.

The following is an index to the annual reports of railroad companies which have been reviewed in previous numbers of the current volume of the *Railroad Gazette*:

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Ala., N. O. Tex. & Pac. June 1882	279	252.0
Allegheny Valley	251	165
Atchison, To. & Santa Fe. June 1882	319	94.0
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Baltimore & Potomac	445	51.0
Boston, Concord & Montreal	411	31.0
Camden & Atlantic	191	83.0
Canadian Pacific	519	23.5
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Central Pacific	167	165
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Chi., Burlington & Quincy	229	147
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Chi., Milwaukee & St. Paul	57	241
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Mobile & Girard		
This company owns a line from Columbus, Ga., to Troy, Ala., 84 miles, and its report is for the year ending May 31. It is controlled by the Central Railroad Co. of Georgia.		
The equipment consists of 7 locomotives; 7 passenger and 5 baggage and mail cars; 36 box, 44 flat, 21 coal and 8 cabooses cars.		
The general account is as follows, condensed:		
Common stock	\$887,804.01	
Preferred stock	279,801.29	
Pike County stock	4,630.00	
Funded debt	1,080,000.00	
Agent's ledger	1,538.40	
Total	\$2,353,573.61	
Construction (including stock interest)	\$2,003,809.89	
Profit and loss	304,706.56	
Bills and accounts receivable	44,065.07	
Cash	962.19	
	2,353,573.61	
The funded debt consists of \$261,000 second-mortgage 8 per cent. bonds; \$800,000 third-mortgage 4 per cent. bonds and \$19,000 third-mortgage 6 per cent. bonds. It was reduced \$5,000 during the year by payment of second-mortgage bonds.		
The traffic reported is as follows:		
1883-84. 1882-83. Inc. or Dec. P. c.	1883. 1882. Inc. or Dec. P. c.	
Passenger	773,924	775,642 D. 1,718 0.2
Freight	1,537,224	1,767,871 D. 230,647 13.0
Service and switching	232,304	297,794 D. 65,490 21.9
Total	2,543,452	2,841,307 D. 297,855 10.5
Passenger-miles carried	550,054	584,740 D. 34,986 5.0
Passenger-miles	28,181,908	27,277,487 I. 904,481 3.3
Tons freight carried	1,028,688	9,225,655 D. 598,907 26.8
Ton miles	167,974,822	199,087,919 D. 31,113,007 15.6
At train load		
Passenger No.	98	35 I. 1 2.9
Freight tons	100	113 D. 4 3.5
At rate:		
Per passenger mile	2,323 cts.	2,344 cts. D. 0.021 cts. 0.9
Per ton-mile	1,411 "	1,199 " L. 0.215 " 17.9
Per freight car	0.477 "	0.402 " I. 0.075 " 18.7
Locomotive service cost 20.15 cents per mile run. Freight tonnage and ton-miles include company's freight (241,833 tons carried 17,901,887 miles last year), but the average rate is on revenue freight only.		
The earnings for the year were as follows:		
1883. 1882. Inc. or Dec. P. c.	1883. 1882. Inc. or Dec. P. c.	
Freight	\$2,117,949	\$2,092,679 I. \$25,760 1.2
Passenger	654,746	639,506 I. 15,240 2.4
Mail and express	86,600	64,297 I. 22,383 34.9
Rents	4,200	4,200
Total	\$2,863,555	\$2,800,682 I. \$60,873 2.2
Expenses	1,908,177	1,883,681 I. \$4,496 4.5
Net earnings	\$905,378	\$917,001 D. \$21,623 2.4
Gross earn. per mile	4,081	4,359 D. 278 6.4
Net	1,276	1,437 D. 161 11.2
Per cent. of exps.	68.73	67.26 I. 1.47 ..
Expenses include taxes, which were \$65,552 last year and \$69,725 in 1882. The increase in expenses was large enough to produce a small decrease in net earnings.		
The income account was as follows:		
Net earnings, as above		\$895,378.37
Miscellaneous receipts		48,595.94
Total		\$943,974.31
Coupon interest		\$516,130.00
Construction and equipment		385,945.81
Other expenditures		37,725.39
Balance, surplus		\$93,701.20
The expenditures for construction and permanent improvements of road amounted to \$89,942; for new equipment to \$24,904. During the year 3,433 tons of steel rails and 121,225 new ties were used in renewals, and 51,25 miles of track were ballasted. Most of these renewals were made on the main line and the Iowa City Division.		
The directors' report says that the business of the last half of the year is more satisfactory than was at first anticipated on account of the partial and in some places entire destruction of the corn crops and early crops and a consequent diminution of traffic. Notwithstanding this loss to the farming and business interests of the country along the line, the earnings of the half year and for the whole year were in excess of the previous year, indicating increased revenue from through business. The gradual increase of traffic has made necessary a corresponding increase of equipment, and no provision having been made to meet this contingency the expense of additional rolling stock was defrayed from the net earnings.		
Arrangements have been made to convey into the treasury the money expended in constructing the new lines of road mentioned in the former reports, upon which no innumerable franchise now exists, by bonding such lines at a rate not in excess of the charge upon other parts of the road. In order to maintain the present value of the company's system of railroads and for the purpose of procuring increased traffic and protection against rival interests, the directors have determined to continue the work of extension to a limited amount during the present year, in accordance with the previous policy of the company, provision having already been made for such extension and the work begun.		

as a necessary measure of economy, the effect of which will be felt hereafter.

Burlington, Cedar Rapids & Northern.

At the close of its last fiscal year, Dec. 31, 1882, this company operated the following lines:

Burlington, Ia., to Albert Lea, Minn.	252.0
Lin., Ia., to Postville	94.0
Vinton, Ia., to Worthington, Minn.	230.0
Muscatine, Ia., to Riverside	31.0
Elmira, Ia., to Montezuma	83.0
Clinton, Ia., to Noel	23.5
Total	713.5

For the main line 11 miles (Mainly Junction to Northwood) are leased from the Central Iowa Co. The 12½ miles from the Iowa line to Albert Lea are nominally the property of the Minneapolis & St. Louis Co., while the 182 miles from Holland, Ia., to Worthington, Minn., are owned by the Cedar Rapids, Iowa Falls & Northwestern, and the 73 miles from Iowa City to Montezuma by the Iowa City & Western; but these lines are really the property of the Burlington, Cedar Rapids & Northern Co., and their cost is included in its capital account.

The equipment consists of 78 locomotives; 24 passenger, 2 chair, 12 combination and 12 baggage, mail and express cars; 2,230 box, 15 refrigerator, 115 stock, 45 flat and 61 caboose cars; 1 director's car, 1 pay car, 6 snow plows and 7 service cars; 227 hand and rubble cars.

The average mileage worked was 701.70 miles last year, against 637.94 miles in 1882. Additions during the year were the completion of the line to Worthington.

The general account, condensed, is as follows:

Stock	Funded debt	Stock, accounts and balances payable	Income account

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EDITORIAL ANNOUNCEMENTS.

Passes.—All persons connected with this paper are forbidden to ask for passes under any circumstances, and we will be thankful to have any act of the kind reported to this office.

Contributions.—Subscribers and others will materially assist us in making our news accurate and complete if they will send us early information of events which take place under their observation, such as changes in railroad officers, organizations and changes of companies, the letting, progress and completion of contracts for new works or important improvements of old ones, experiments in the construction of roads and machinery and in their management, particulars as to the business of railroads, and suggestions as to its improvement. Discussions of subjects pertaining to all departments of railroad business by men practically acquainted with them are especially desired. Officers will oblige us by forwarding early copies of notices of meetings, elections, appointments, and especially annual reports, some notice of all of which will be published.

Advertisements.—We wish it distinctly understood that we will entertain no proposition to publish anything in this journal for pay, EXCEPT IN THE ADVERTISING COLUMNS. We give in our editorial columns our own opinions, and those only, and in our news columns present only such matter as we consider interesting and important to our readers. Those who wish to recommend their inventions, machinery, supplies, financial schemes, etc., to our readers can do so fully in our advertising columns, but it is useless to ask us to recommend them editorially, either for money or in consideration of advertising patronage.

NEW YORK GRAIN RECEIPTS.

We remarked that in June, when the railroads were carrying grain from Chicago to New York for 15 cents per 100 lbs., the receipts of grain at New York by canal were exceptionally small. Of grain and flour together they were only 33.3 per cent. of the whole, and of grain alone (the canal boats carry scarcely any flour), they were but 40.6 per cent. During July the deliveries at New York by rail were nearly all of shipments made at the 20 cent rate, and under this the canal fared much better, delivering at New York 45½ per cent. of all the grain and flour and 56½ per cent. of the grain received there during the month. The total receipts of grain in New York were 888,600 bushels less in July than in June, but its receipts by water were 941,900 bushels (26.8 per cent.) more in July, while by rail they were 1,825,500 bushels (35.6 per cent.) less.

The distribution of the rail shipments in July is the more interesting because this was the first month since March that there had been any profit worth mentioning from the business. The change from June consists chiefly of a gain by the Pennsylvania, from 11.2 to 18.0 per cent. of the whole, offset by a loss by all the other roads except the New York Central. The Pennsylvania Railroad alone carried more bushels in July than in June, which is probably due to the fact that its lines are farther south than those of the other companies, and received more shipments of new wheat to New York. The decrease from June was 40 per cent. on the West Shore, 62 on the Lackawanna, 32½ on the Erie and 23½ on the New York Central. The receipts by the New York Central and the Lackawanna were smaller in July than in any other month of the year; on the West Shore they were larger than in any other month but June, on the Pennsylvania larger than in any other month except May. The total rail receipts, though 25½ per cent. less than in July, were 16½ per cent. more than in May.

During the seven months ending with July, the railroads carried 75.7 per cent. of all the grain and flour delivered at New York, and 58.4 per cent. of the receipts during the three months that the canal was open. Evidently this was possible only because during all this time except July the rate was an unprofitably low one.

The receipts of grain and flour at New York during the seven months ending with July, by rail and water, have been for ten successive years in bushels:

Year.	P.c. by rail.	P.c. by water.	Date canal opened.	Total.
1875...	29,111,657	73.1	10,697,812	39,800,469
1876...	35,284,500	68.6	16,165,868	51,450,377
1877...	21,088,701	61.5	13,251,223	34,449,924
1878...	45,618,128	66.4	25,675,905	71,294,038
1879...	59,774,214	79.1	15,761,065	75,635,879
1880...	54,732,386	62.8	32,379,928	87,112,314
1881...	55,710,889	74.8	20,079,991	79,780,880
1882...	36,678,025	74.2	12,768,175	49,446,200
1883...	44,416,482	71.4	17,826,554	62,443,068
1884...	39,366,203	75.6	12,628,965	51,895,228

The time when the canal opens may have a great effect upon the amount and percentage of receipts by water. The smallest canal receipts, however, since 1875, were this year; in 1882, when the total canal receipts were nearly as small, the average daily receipts after the opening down to July 31 were but 114,012 bushels per day, while this year, in spite of the low rail rates, the canal receipts were 145,160 bushels per day. The proportion of canal receipts is smaller this year than in any other since 1880, and with the exception of 1880 is the smallest for the ten years. The July receipts, however, indicate that if rail rates are maintained during the season, as is probable, the canal will make a very much better showing.

The amount of the receipts by rail has also been small this year, smaller than in any other year since 1877, except 1882, after disastrously small crops, and 5,150,000 bushels (11½ per cent.) less than last year. The decrease was very large in the first three months of the year (9,565,000 bushels, or 37½ per cent.), the rates charged then, though irregular and averaging less than last year, still leaving some profit to the carrier. During the next three months, a rate of 15 cents from Chicago prevailed, and there was an increase from 15,085,000 to 18,268,000 bushels (20 per cent.) in the rail receipts at New York; in July, with a 20 cent rate (against 25 cents last year), there was an increase of 17 per cent. this year. Thus, during the summer the railroads have gained, but only by charging unprofitably low rates. Not till August did the canal have an opportunity to compete for the traffic on the same terms as last year.

The two new railroads from Buffalo to New York have not so far had a great effect on the grain movement. The receipts by the West Shore are not reported separately as yet, but as the "other roads" with which they are included have never carried more than a very small amount, we are safe in saying that all or very nearly all the increase this year in the receipts by "other" roads was brought by the West Shore. Now the receipts and shipments by the several roads during the seven months ending with July for ten successive years have been:

Year.	N. Y. Cen.	Erie.	Penna.	Lacka-	Other
1875...	12,437,523	10,978,245	5,345,398	.....	350,291
1876...	18,432,563	12,029,292	4,383,411	.....	410,243
1877...	11,061,141	6,262,639	3,708,938	.....	106,580
1878...	26,917,037	11,537,368	6,632,888	.....	530,835
1879...	30,834,432	17,111,927	11,184,752	.....	643,103
1880...	28,144,855	17,360,230	8,763,904	.....	505,357
1881...	24,690,617	22,077,946	12,191,994	.....	750,332
1882...	18,119,347	11,304,618	6,847,992	.....	406,068
1883...	19,381,331	14,707,701	7,090,393	2,837,307	400,350
1884...	16,833,976	11,466,072	5,160,176	2,776,949	3,029,090

Thus though neither of the new roads has brought to New York anything like as much as any of the three old ones, they have together this year (crediting the West Shore with the 2,039,000 bushels of grain over last year by "other" roads) brought 5,404,000 bushels, which is 13.8 per cent. of the total rail receipts, and enough to make considerable difference in the receipts by the older roads. Thus comparing with 1882, when neither of the new roads was carrying grain, we have—

An increase of	2,588,238 bushels in receipts by all roads.
A decrease "	1,285,371 "
An increase "	161,454 "
A decrease "	1,687,816 "
An increase "	5,399,961 "

N. Y. Cen. Erie. Penna. other roads.

Curiously, the chief loss following the opening of the two new roads to Buffalo has not been in the receipts by either of the old Buffalo roads, but in those by the Pennsylvania. Comparisons with a single year, however, are apt to be misleading. If we should compare with last year, we should find that while there was a decrease of 5,150,000 bushels in the total rail receipts, the new West Shore brought 2,630,000 bushels, leaving a decrease of no less than 7,780,000 by the other roads, and

The Lackawanna lost..... 60,000 bush. or 21 p. c.
The New York Central lost..... 2,547,000 " or 13.1 "
The Erie lost..... 3,241,000 " or 22.0 "
The Pennsylvania lost..... 1,930,000 " or 27.2 "

So if we find that the opening of the Lackawanna last year seems not to have injured the Erie, whose share of the total rail receipts rose from 30.9 per cent. in 1882 to 33.1 in 1883, the opening of the West Shore seems to have hurt it especially, its percentage having fallen to 29.2 this year. But this may have had little to do with it, and actually the Erie's proportion was particularly small in the early months of this year, when the arrivals by the West Shore were small. We shall better understand the course of this traffic by the different routes by examining their percentages in successive years, as follows:

Year.	N. Y. Cen.	Erie.	Penna.	Other.	West
1875...	42.7	37.7	18.4	1.2	.....
1876...	52.3	34.1	12.4	1.2	.....
1877...	32.2	29.5	17.5	0.8	.....
1878...	59.0	23.3	14.5	1.2	.....
1879...	51.6	28.0	18.7	1.1	.....
1880...	51.4	31.7	16.0	0.9	.....
1881...	41.4	37.0	20.4	1.2	.....
1882...	49.4	30.8	18.7	1.1	.....
1883...	43.6	33.1	16.0	0.9	0.4
1884...	42.9	29.2	13.1	1.0	7.1

In each of the five years from 1876 to 1880 the New York Central carried more than half of the rail grain.

In 1881 the Erie diverted a large share of this traffic, and the Pennsylvania also (owing to snow blockades further north) carried more than its usual proportion. In 1882 the new Lackawanna took 6.4 per cent. of the grain, but the Erie gained largely, and the loss fell on the New York Central and the Pennsylvania. This year the two new roads have taken 18.8 per cent. of the whole, and of this loss, compared with 1882, nearly one-half was suffered by the New York Central, which had been carrying about one-half of the grain, and about two-fifths by the Pennsylvania, which had been carrying less than one-fifth of the grain, while less than an eighth of the percentage of loss came from the Erie, which had been carrying more than three-tenths of the grain.

Still more clearly shall we see the effect of the new roads on the old ones by comparing the percentage of each of the old roads of the total receipts of the three, as follows:

1879.	1880.	1881.	1882.	1883.	1884.
New York Central...	52.2	51.9	41.9	50.0	47.0
Erie.....	28.9	32.0	37.5	31.1	35.7
Pennsylvania.....	18.9	16.1	20.6	18.9	17.3

Thus the three old competitors compared with each other have suffered no very great changes. For three years previous to 1880 the Erie's percentage was considerably less than it has been since, but its recent extension of its Western connections seems not to have gained it more than the New York Central has gained meanwhile. The Pennsylvania alone had a smaller share this year than in any of the others, which the condition of last year's crops on the immediate Western connections of the different roads may account for.

We should expect that the two new roads to Buffalo would divert traffic chiefly from the old roads to Buffalo. It is not impossible that this has been so, but if so the proportion of the traffic attainable at Buffalo has been increasing largely, and as the extension of grain production of late years has been largest in the country due west of the lakes, this may very well be true.

The report of the Bureau of Statistics for the fiscal year ending with June shows that our wheat and flour exports for that year were less even than after the disastrous harvest of 1881 (when the production was 40 million bushels less than last year), that they were 42 per cent. less than in 1880-81, and the smallest since 1878, when we had just begun to recover from the prolonged stagnation following 1873. The decrease from last year was 38 millions of bushels (26 per cent.) in the exports, while the decrease in the crop was 83 millions. Even of the largest crop ever grown, 504 millions, in 1882, we exported but 145½ millions, which is 39 millions less than from the crop of 498 millions grown in 1880, and 35 millions less than from the 459 millions grown in 1879, and even a little less than the exports from the crop of 420 millions grown in 1878. The percentage of the crop exported in each fiscal year has been:

1878-79.	1879-80.	1880-81.	1881-82.	1882-83.	1883-84.
35.1	39.3	37.1	31.0	29.0	25.5

Thus we see that the proportion of the crop exported has been decreasing ever since 1879.

The exports of flour, wheat and corn in each of the last nine fiscal years ending with June have been:

Year to June 30:	Flour, bbls.	Wheat, bu.	Corn, bu.	Flour, wheat, bu.
1875-76	3,935,912	55,073,122	49,493,572	74,750,682
1876-77	3,132,874	58.2	6,620	70,860,983
1877-78	4,303,57	90,354,408	85,461,898	92,139,236
1878-79	5,669,485	134,652,877	86,296,252	147,687,649
1879-80	6,016,041	151,655,313	96,169,877	180,304,180
1880-81	7,874,962	149,453,771	91,349,817	184,891,100
1881-82	5,733,194	92,822,732	43,148,889	118,622,105
1882-83	9,068,581	104,971,133	40,063,733	145,779,747
1883-84	8,708,152	68,241,759	44,799,061	107,428,443

The increase in population has certainly been much faster than the increase in wheat production. From the harvest of 1879 to that of 1882 the population increased probably 5 millions, which addition consumed, according to usual estimates, about 22½ million bushels of wheat. The crop of 1882 was 45 millions more than that of 1879, but the exports from it were 34½ millions less; but the larger home consumption would account for half of the increase in production.

The present population of nearly 57 millions will require about 35 million bushels more than the population in 1880, and 7½ millions more than last year. The requirements for seed are important, taking probably more than 10 per cent. of the average crop. The acreage sown, however, has increased but little since 1880—not 2 per cent.—the large increase in the Northwestern Mississippi Valley states and on the Pacific coast having been almost balanced by a decrease in other states. With the present price of wheat a decrease rather than an increase in the area sown for next year's crop is probable, though there will probably be a large increase in Dakota, Oregon and Washington, and possibly Nebraska. The increase is likely

to be confined chiefly to those parts of the country where corn cannot be grown profitably.

The surplus of old wheat on hand at the beginning of the crop-year is an element which often has a great effect on the movement, as it doubtless had last year and the year before, the exports of 1882-83 being less and those of last year more because of the large surplus of old wheat on hand a year ago. This year the old stocks seem to have been worked off so as to leave less than usual, and at least much less than last year. Thus if the crop of this year exceeds that of last year by 80 millions, as is possible, though the Department of Agriculture estimates the increase to be but 64 millions, we may not have more than 25 millions more to spare than we had last year, and should we keep the whole of that over until after the next harvest, we would still have a smaller stock than we held over from the crop of 1882. It is not the pressure of our own crop that is keeping down prices so much as the fact that the consuming countries have unusually large supplies of old wheat just as the new crop is ready to come forward, and crops elsewhere in the world are better than the average.

The through shipments from New York to the West by the trunk lines continue surprisingly large in view of the general complaint of dull trade. The reported shipments were larger this year in July than in any previous year, and one-eighth more than last year, when, however, the shipments by the Lackawanna were not included. These shipments, perhaps, were as large as or possibly larger than the increase reported this year; but it still is surprising to learn that this traffic should have been nearly as large as last year, when it was larger than ever before. This year there was an increase of 6 per cent. from June to July, last year an increase of but 1 per cent., in 1882 a decrease of 40 per cent. (due to a great advance in rates), and in 1881 a decrease of 15 per cent. We should expect that the dullness of business in the country would be felt very quickly by reduced shipments of merchandise to the interior, as it has been in reduced imports; but the New York shipments, measured by their gross amount, do not indicate it. Very likely, measured by their value, there has been a large decrease, not only by the fall in prices, but by the substitution of goods of lower class for those of high class, and there may have been a diversion of shipments from the canal to the railroads, though as rates have not been changed it is not easy to see why that should be.

The lumber business seems to be in a very depressed condition, but it is not due to a reduction in consumption, but probably chiefly to the failure of the trade to increase as it had been doing for some years, and to the larger production which the increase in consumption in those years had stimulated. The amount marketed at Chicago during the seven months ending with July last year was 967,717,000 ft., against 975,882,000 ft. last year, a decrease of less than 1 per cent. The stock on hand Aug. 1 was about 10 per cent. more than last year or the year before, and it is reported that the stocks at the mills are unusually large. The increase in the stock on hand at Chicago during July was 85,110,000 ft. this year, against 80,425,000 last year and 68,964,000 in 1882—not enough more than last year to account for the weakness of the market, which is, doubtless, very largely due to a knowledge that the requirements for the remainder of the year will be less than in recent years. At least the indisposition of retailers to lay in stocks at the present low prices, and the recent considerable decline in the prices cannot be easily accounted for otherwise, the consumption so far having been well maintained, and the amount that has yet been offered on the market not being much in excess of last year's offerings, unless much more than then has been sent to market from the Upper Mississippi mills, which is possible. It seems more probable, however, that there has been this season a considerable decrease in the demand from Northwestern Minnesota, Dakota, Manitoba, and that the mills which supply these districts have had to look further south for a market for an unusually large part of their produce. But if this is so, then the consumption in the district usually supplied by Chicago has been larger and not smaller than usual, though there may have been a decrease in the total Northwestern consumption.

It is now understood that Mr. John King, Jr., for 14 years Vice-President of the Baltimore & Ohio, and for the latter part of that time in charge of all the Baltimore & Ohio interests west of the Ohio, will succeed Mr. Jewett as President of the Erie. Mr. King has spent most of his active life in railroad service. Having been

in his young days a merchant, he entered the service of the Baltimore & Ohio as its Baltimore station agent. He was afterward Auditor of that company, and while holding that office, we believe, performed the duties of General Freight Agent, Mr. Geo. R. Blanchard, now Vice-President of the Erie, being the first regular General Freight Agent of that company, and relieving Mr. King of the duties of that position. While Vice-President he had under Mr. Garrett general charge of the operation of the road, and his long service in that capacity shows how well he approved himself to that company. It was ill-health which induced him to resign when he was Receiver of both the Marietta & Cincinnati and the Ohio & Mississippi, and the Baltimore & Ohio was very unwilling to spare him. He has spent nearly all the time since his resignation in Europe, and now feels that he has recovered his health, which he certainly will need in full measure if he is to undertake the management of the Erie, the difficulties of which are such that probably not very many of the men qualified to fill the place would be willing to accept it, although, in spite of recent financial misfortunes, a great number of the original difficulties have been cleared away under Mr. Jewett's administration.

Mr. Wm. H. Vanderbilt, in an interview reported in the New York *Tribune* last Monday, made some statements concerning the Erie and the West Shore which are interesting. The Erie, he says, cannot get a very large business without cutting rates, which the other trunk lines wink at. Yet he says that if Mr. John King, Jr., is made President of the company, "every one would know at once that rates would be strictly maintained." This is equivalent to saying that Mr. King will be satisfied if the Erie under his administration does not get "a very large business." Mr. Vanderbilt also says, what we believe has never been admitted before, that he has a large interest in the Erie. He speaks very highly of Mr. King, says that he would manage the road "in a business way for the best good of the stockholders;" but the particular benefit that he mentions as likely to result from his accession is to "all the trunk lines." He thinks it would be equivalent to a rise of about 10 per cent. in New York Central stock, which would amount to nearly \$9,000,000—a very great benefit to be conferred to its chief rival by the election of a new President of the Erie Company. It would have been more complimentary to Mr. King to point out the benefit that he will confer upon the Erie, and for Mr. Vanderbilt to look for his advantage to an improvement in his large interest in that road. And we suspect that there, if anywhere, it will be found. Mr. King's policy heretofore does not indicate that he will rest content with an unprofitably small business for his own road if that is the result of a strict maintenance of rates. On the other hand he has been as eager as most railroad managers that his own road should be kept busy. That he will knowingly take any action which will result in reducing profits while increasing traffic is of course improbable; no one does that. But if the Erie is any less formidable a rival of the New York Central under Mr. King than under Mr. Jewett, we make bold to say that it will not be Mr. King's fault. We warn those who are expecting to live on a 10 per cent. rise of New York Central or Pennsylvania stock caused by Mr. King's accession to the Erie that they are likely to find it a very uncertain source of income.

Mr. Vanderbilt denies explicitly that he has bought any West Shore bonds, the price of which had advanced on report that he was buying them, and would reorganize the company so that it might do the least possible harm to the New York Central. But in spite of the purposes of the managers of these two companies, the two systems will probably at some time be forced to come under the same general management. They can be worked to much better advantage together than separately, and when this fact is once thoroughly understood, a union will be near at hand. Most properties finally get into the hands of those to whom they are worth the most, because they can and will pay most for them. In the case of a company with a very large number of stockholders it might take a long time to bring such a union about; but in this country great financial combinations are comparatively easy; and if the value of the stock of two companies can actually be increased by their union, some one or some party finds it out, secures the requisite interest, effects the union—and reaps the harvest. If there is great disinclination to a union by the existing managements, experience of the harm that they can do each other by independent action is likely to convert them or compel them to give place to others. Mr. Vanderbilt cannot understand why any one should want West Shore

bonds when the road barely earns its working expenses. If it earns its expenses now, when it is but just opened, and is still incomplete, and traffic generally is light, it will certainly earn something more hereafter, and it will also certainly do the New York Central a great deal of harm, especially if they do not work in harmony. The narrow margin of profit on the West Shore now is not due to any inherent defects of the railroad or its rolling stock, but to its incompleteness and the smallness of its traffic. Finish it as designed and give it even half as much traffic as the New York Central carries, and it would probably have about as large a proportion of profits. The completion of the road is a matter of a few millions; the acquisition of a large traffic, comparable with that of the other trunk lines, is not so simple a matter. With the railroad system west of Buffalo largely controlled by the old trunk lines, and with the Lackawanna competing with the West Shore for what traffic is free from such control, including lake shipments, it must take a long time for it to secure what can fairly be called a large trunk-line traffic, but it can earn some interest on its cost as soon as it is fairly completed.

Since last week we have had reports of July earnings from 21 more railroads, but they are exceptionally unimportant ones, the aggregate mileage of the 21 being but a fourth more than that of the Chicago, Milwaukee & St. Paul, and their aggregate earnings somewhat less. That they are roads of light traffic may be inferred from the fact that their average earnings per mile this year were but \$318.

We have had reports of earnings in July now from 57 railroads, whose aggregate mileage and earnings and average earnings per mile were :

July:	1881.	1883.	Inc. or Dec.	P. c.
Miles.....	42,610	39,758	+ 2,852	7.2
Earnings.....	\$18,577,836	\$18,707,816	-\$129,980	0.7
Earn. per mil.	436	471	- 35	7.4

Of the 21 roads reporting last week no less than 18 were Southern roads, and of these eight report an increase in earnings, and so far of 18 Southern roads that have reported ten have had an increase of earnings, but in the aggregate, in spite of the increase of 312 miles in road, they have a decrease of \$61,907 in miles worked—a slight change.

The only road reporting a large increase in earnings in July during last week is the Kansas City, Fort Scott & Gulf, which gained 34½ per cent. It was one of the few which profited by the new crops so early. Three roads north of the Ohio that report, and that are far enough south to have carried some of the new winter wheat crop (which is poor on their lines, however), all report decreases—the Main Line of the Alton & Terre Haute, 18 per cent.; the Belleville Line, 17 per cent., and the Cincinnati, Washington & Baltimore, 4½ per cent.

We still lack the reports of several of the great roads, as may be judged by the fact that 15,000 (35 per cent.) more miles than have yet reported, in June earned \$11,000,000 (40 per cent.) more money.

The Union Pacific's decrease in net earnings in June was smaller than in any previous month of this year, but, as we have heretofore pointed out, the large declines of the previous months were largely due to unusually large net earnings in the corresponding months last year, while for the remainder of the year we have to compare with months when there was a great decrease from the net earnings of 1882. The net earnings last June were indeed but \$69,707 (6½ per cent.) less than last year, but they were \$302,233 (22½ per cent.) less than in 1882. Though the net earnings of this road were \$1,478,808 less in 1883 than in 1882, or in the five months ending with May, there was an increase of \$500,180 last year. After the large decrease in June there was a large increase in July, but during the last five months of the year the decreases were very large. Without any improvement, therefore, the company may show as large net earnings as last year in June, and in every month after July.

The course of its earnings will not be properly understood by a comparison with corresponding weeks of last year alone, but we need in addition a comparison with corresponding weeks of previous years and with previous months of this year. In successive months of this year they have been :

	Gross earnings.	Expenses.	Net earnings.
January.....	\$1,538,908	\$1,365,364	\$233,544
February.....	1,547,960	1,291,019	346,950
March.....	1,972,712	1,294,553	708,150
April.....	2,125,965	1,177,023	931,940
May.....	2,112,342	1,169,867	942,475
June.....	2,190,282	1,149,437	1,040,846

It appears thus that the gross earnings were a little

larger in June than in May or April, and that the working expenses were somewhat reduced and were smaller than any previous month of the year (smaller also than in any month of 1883 or 1882), and the small gain in earnings and the moderate decrease in expenses compared with May and April resulted in an increase in net earnings of \$104,371 (11 per cent.) over those of May, and \$94,906 (10 per cent.) over those of April, a moderate and reasonable gain.

As in July last there was a large increase of both gross and net earnings over 1882, we might expect a considerable decrease this year. Actually, however, the earnings seem to have been abnormally small in that month in 1882, and not abnormally large in 1883. After July the company will not be doing fairly well unless it equals, or nearly so, the net earnings of last year.

The Central Pacific Railroad, in the twelve years from 1872 to 1883 inclusive, carried 604,382 passengers through west, and only 359,121 through east, which indicates that it has brought 245,261 people to the Pacific coast to stay in that time. During the whole of this period except the last three months, it was the sole rail carrier to the Pacific coast. This number is equal to 44 per cent. of the whole population of California in 1870, and to 36 per cent. of the population of the whole Pacific coast in that year. The excess going west was but small (13 per cent.) in 1880, but it has been very large in the three years since, and was 84 per cent. last year, when the west-bound movement was larger than in any other year except 1875, and the eastward movement was the largest without any exception, the total number of through passengers being 113,807, while the largest numbers previously were 106,341 in 1875, 98,420 in 1876, and 95,236 in 1882.

It appears, then, that this is a business which has not grown regularly nor rapidly. It was twice as great last year as in 1872, but only 8 per cent. more than in 1875.

Northern Pacific, or rather the Oregon Railway & Navigation Co., having become a carrier of passengers to the Pacific coast, the Central Pacific's report will no longer show the whole amount of trans-continental travel; and unless California grows faster than it has done heretofore, the Central Pacific's through travel must decrease. Its revenue from this through travel last year was \$2,887,054, an average of only \$35.46 per passenger, which indicates that by far the larger number were immigrants, and that first-class rates were badly demoralized. These were about 36½ per cent. of the company's total passenger earnings, and 11.7 per cent. of its earnings from all sources. Its earnings from through freight (a large part of which was hauled 1,300 miles) were \$5,174,884, which is 84.7 per cent. of its total freight earnings and 20.9 per cent. of its total earnings. The company's revenue from all through business (including express, etc.) was about one-third (33.5 per cent.) of its total revenue. Its profits from this business were doubtless a much smaller share of its total profits, yet considerable.

A telegram says that the General Manager of the Union Pacific sent a letter to the Executive Committee of striking shop employes at Denver, requesting an interview with representatives of the strikers with a view to an amicable adjustment of differences. This is in striking contrast with the conduct of some railroad officers and other employers, who have refused to see any representatives of their employes even before a threatened strike, and when discussion and negotiation might have averted one altogether. It would have been better in this case to have negotiated with the men before they struck, and the men should have themselves asked for an interview and presented their grievances. Perhaps they assumed, judging from previous experience, that they would not be listened to. But after this action of the General Manager, it certainly is probable that hereafter when differences arise between the company and its employes, the latter will ask for a hearing before the strike, and if the agents of the company fully explain its action and position and necessities, there will be much less probability that the men will strike against its reasonable requirements. If its requirements are unreasonable, they will be fully justified in striking.

Immigration and the Growth of Population.

The number of immigrants in June, by the report of the Bureau of Statistics, was decidedly smaller this year than for several years previous, the arrivals having been:

1890.	1881.	1882.	1883.	1884.
72,587	95,535	81,788	75,034	55,028

It was in 1880 that we began to have a large immigration, the arrivals in the first half of that year having been

268,726, against 90,294 in 1879, which latter cannot be called a large immigration. In the first half of this year the arrivals have been 271,483, against 321,845 last year, and larger numbers in the two previous years; and for the fiscal year ending with June the arrivals have been, for 18 successive years:

Year.	Year.	Year.	Year.
1866-67	298,907	1875-76	169,986
1867-68	281,189	1876-77	141,457
1868-69	312,708	1877-78	138,469
1869-70	357,203	1878-79	177,826
1870-71	321,550	1879-80	457,257
1871-72	404,806	1880-81	669,411
1872-73	450,803	1881-82	788,092
1873-74	311,330	1882-83	509,114
1874-75	317,408	1883-84	509,834

The decrease in one year is 15 per cent. and in two years 35 per cent., but the arrivals were still larger last year than in any year previous to 1880-81. The decrease in June is more significant than that for the year, being 26 per cent., against 16 per cent. for the half-year and 15 for the whole fiscal year. The largest arrivals are usually in the quarter ending with June. In this quarter they have been the following numbers and percentages of the fiscal year's arrivals for four years:

1881.	1882.	1883.	1884.
Numbers.....	308,155	329,095	253,110
P. c. of year's arrivals.	46.0	41.7	42.3

This indicates that immigration is still declining, the number for the quarter when it is largest having been 20 per cent. less than last year, when it was 23 per cent. less than the year before. A continuance of this decline is to be expected and desired until the industrial conditions are better in this country, that is, until there is a better demand for labor. If the immigrants were chiefly people who would settle upon and begin the cultivation of new land immediately, it would be desirable to have as many as possible of them now, as they would give employment to industries which now are able to produce more than the country will consume. But only a very small part of them are of this class.

The population of the United States at the end of June, according to Col. Wm. M. Grosvenor's method of calculating, namely, adding 2 per cent. each year plus the immigration to the total population of the previous year, is 56,940,000, an increase of 6,785,000 since the Census of 1880. This method applied to the population by the Census of 1870 gives almost exactly the population by the Census of 1880. It is an extraordinarily rapid rate of increase, but the immigrants arriving in these four years have been no less than 2,567,000, and an exceptionally large proportion of these are of the reproductive ages. The chief source of possible error is in the inaccuracy of the Census of 1870, which gave too small numbers in the South, so that the increase from 1870 to 1880 as shown by the census was somewhat in excess of the actual increase. As the population of the South was but 30 per cent. of that of the whole country, a considerable error in the enumeration there would make but a small percentage of the population of the country, and would reduce by only a minute fraction the yearly percentage of increase. A greater effect is probable by a change in the rate of natural increase in population, which is never so great in an old as in a new country, and probably will decrease here from decade to decade until it is no greater than in Great Britain, where the population increased about 12 per cent. from 1871 to 1881, which is but a trifle more than 1 per cent. yearly, which is a more rapid increase than in any other European country. But against this tendency to a decrease in the rate of natural increase we have in the four years of this decade the effect of an extraordinary increase of the child-bearing population through immigration.

By the method of calculating adopted we shall have during this current fiscal year (ending June 30, 1885,) an increase of about 1,139,000 of the population, plus whatever immigration there may be. Thus the latter may fall off one half and still leave the increase of population very large—indeed, not one-fifth less than it would be if there should be no decrease in immigration. It is important to bear this in mind, for many seem to forget that the growth of the country is chiefly within itself, and not from abroad. Last year the natural increase was more than twice as great as the large immigration, which, evenly distributed, was sufficient to add only 9 to the population of a town of 1,000 inhabitants. And the relative importance of the immigration is decreasing much faster than the absolute decrease in immigration, because of the greater number added by the natural increase. Thus the 375,000 immigrants arriving in 1851 were 16 per thousand of the population at the beginning of the year; the 387,203 arriving in 1869-70 were 10% per thousand; the 789,000 arriving in 1882 were 15% per thousand, while the 510,000 arriving last year were only 9% per thousand. The population is now so large that even a large immigration has comparatively little effect, and the country will grow very fast without any. If the assumption that there is an increase of 2 per cent. yearly is true, then without one more arrival we would have 64 millions of people in 1890, an increase of 14 millions, or 28 per cent. over that of 1880, against 30 per cent. from 1870 to 1880. But we shall have a considerable immigration; if it follows the course of the last decade (when it fell off greatly after the fourth year), it will become very large again by the last year of this decade. This is something which cannot be calculated or estimated; however. Peace and plenty in Europe will tend to keep it down; good times and prosperity here will increase it. Just now, apparently, though the demand for labor has decreased in Europe, it has not decreased so much as it has here; but there is plenty of time for these conditions to change before the close of this decade.

Chicago Shipments Eastward.

Chicago through and local shipments eastward of flour, grain and provisions for the week ending Aug. 16, by the incomplete report to the Board of Trade were 28,912 tons, against 29,176 in the corresponding week of last year and 18,113 in 1883. The comparison with last year is more favorable than has been usual this year since rates were advanced. The tons shipped and the percentage going by each road for the last six weeks have been:

	July	July	July	Aug.	Aug.	Aug.
Tons:	12	10	20	2	0	16
Flour.....	3,420	3,800	3,527	3,410	3,313	3,849
Grain.....	15,480	18,461	20,726	14,492	13,004	16,754
Provisions.....	6,625	6,826	7,005	6,512	6,043	8,309

	July	July	July	Aug.	Aug.	Aug.
Total.....	25,534	30,896	31,858	24,423	22,900	28,912

	July	July	July	Aug.	Aug.	Aug.
Per cent.:						
C. & Grand T.....	13.5	12.9	15.3	17.2	17.9	17.6
Mich Cen.....	8.3	11.8	10.0	9.1	11.0	14.2
Lake Shore.....	19.7	19.3	18.2	17.8	18.2	16.0
Nickel Pl te.....	10.9	9.8	14.0	9.5	9.8	11.4
Ft. Wayne.....	18.2	21.4	17.9	18.1	17.1	15.9
C. St. L. & P.....	7.9	5.6	5.5	7.2	6.2	7.0
Balt. & Ohio.....	10.5	8.4	9.0	11.0	10.3	8.3
Ch. & Atlantic.....	11.0	10.8	10.2	10.1	9.5	9.3

	July	July	July	Aug.	Aug.	Aug.
Total.....	100.0	100.0	100.0	100.0	100.0	100.0

The total shipments last week were thus the largest for three weeks, and they were nearly as large as the average under the 20 cent rate, while the increase over the previous week was 25 per cent., being 29 per cent. in grain, 25 per cent. in provisions and 16 per cent. in flour. The gain in grain shipments might be attributed to the marketing of the new crops; but this does not explain the large increase in provision shipments. Still the provision shipments were much less than in the corresponding week of last year, and the grain and flour shipments much more. Again, an exceptionally large proportion of the provision shipments went by the Chicago & Grand Trunk—30.7 per cent. of the whole. It also led in flour shipments, taking 21.7 per cent. of these, but only 10.1 per cent. of the grain shipments. The explanation given of its exceptionally large share of the flour and provisions is the very low export rates made by the Montreal steamers, which are unable to get full cargoes, the stocks of grain in Canada being very low, and the new crop of that country not yet coming forward. The Montreal steamers are accustomed under such circumstances to make whatever rates are necessary to secure cargoes; but the railroad company affirms that it gets full rates to Montreal, these rates being the same as those to Baltimore, and 8 cents per 100 lbs. less than the rate to New York. When the Canadian grain begins to come forward, the Montreal steamers usually can get cargoes without resort to exceptionally low rates. Steamer rates from New York now are much higher than in the spring and winter.

The Grand Trunk's share of the total traffic last week was larger than that of any other road, which it had not been before for a long time, but it is still not so large a share as it had the week before. Compared with the previous week there are considerable gains by the Michigan Central and the Nickel Plate, and a considerable loss by the Lake Shore. The three Vanderbilt roads together have had the following percentages in the successive weeks:

38.9	40.9	42.2	36.4	30.0	41.6
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while the percentages of the two Pennsylvania roads together have been:

26.1	27.0	23.4	25.3	23.3	22.9
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It must be remembered that the traffic here discussed includes much besides the pooled traffic, and does not include all of the pooled traffic—usually the aggregate of the pooled traffic is considerably more than what is here given. The percentages of pooled traffic may be very different from those here given, and are likely to be larger on those roads which have the lightest local traffic, as the Chicago & Grand Trunk, the Nickel Plate and the Baltimore & Ohio. For some time past, the Chicago & Grand Trunk has probably been carrying more through freight from Chicago than any other road, which, considering the fact that it does not carry much of what goes to New York, and very little of that going to ports further south, is a remarkable achievement, and but a few years ago would have been thought impossible. The distance from Chicago to Montreal by it is 837 miles. It has not carried much grain since the expiration of the 15 cent rate, but in each of the last six weeks has carried more provisions than flour and grain together (though the aggregate shipments of provisions in that time have been equal to little more than a third of the flour and grain shipments), and more than any other one railroad, and one-third of the entire provision shipments. This is a traffic which the Pennsylvania formerly had the larger share of, and its diversion to so great an extent to a comparatively new line is a notable change in the course of traffic. This freight seems to be diverted from one route to another more easily than grain or provisions, for not only has the new Grand Trunk secured most of it, but last week the still newer Chicago & Atlantic carried 16 per cent. of it, and there was left to the other six roads but 53.3 per cent. of the whole. This may be due to the fact that this traffic originates chiefly in Chicago, and is billed from that place, and not, like much other traffic, from points further west by way of Chicago.

Corn.

The Department of Agriculture reports the condition of corn Aug. 1 to have been 96 per cent. of a wholly good condition, against 89 at the same time last year, 88 in 1882, 77 in 1881, 90 in 1890 and 1879. To appreciate this we must consider the acreage, which is 2 per cent. more than last year, 6 per cent. more than in 1882, 8½ per cent. more than in 1881, and 10 per cent. more than in 1880 and 1879. In

1879, when the census gave more accurate returns than we have for other years, and the condition when ripe was estimated at 99, the average yield per acre was 28½ bushels. A condition of 96 means, if continued, an average yield of about 27½ bushels per acre, which applied to the present acreage would make a crop of 1,899 millions of bushels, against 1,551 last year, 1,617 in 1882, 1,194 in 1881, 1,717 in 1880, and 1,755 in 1879, the latter being very much larger than in any previous year, and so far the largest ever harvested.

Favorable weather throughout from now till October will improve the present condition, and hot weather throughout August and warm weather free from frost in September will be favorable weather, the rains having been so abundant to date that a drought would do little damage, though excessive rains for the remainder of August might do considerable. Great injury to the crop is not to be apprehended, unless we have an early frost, and a frost as early as last year would not do nearly so much damage, because the corn is now much further advanced. Probably on the average the corn country does not have a killing frost so early once in ten years, so that the probabilities are much against it. In previous years during August the changes were: A decline from 89 to 84 last year; no change in 1882; a decline from 77 to 69 in 1881 (drought); a decline from 99 to 91 in 1880, and no change in 1879. There appears thus never to have been any improvement of the crop during August, since 1878, at least. But the crop is largely matured in August, and up to the middle of the month reports have been very favorable. It was not always as warm as was to be desired, but the coolness was feared more as possibly ending in frost than as checking the growth. The earliest frosts on record severe enough to injure corn were on the 28th and 29th of August, which, in almost any year, would ruin corn north of the Ohio River. Only once, we believe, has there been one so early.

A crop of 1,900 million bushels, which is what we have the prospect of now, would be of immense advantage to the country, and especially to the upper Mississippi Valley—to Ohio, Indiana, Illinois, Missouri, Iowa, Nebraska and Kansas, which last year (when all but two of them had a light corn crop) produced 998 million bushels of the entire 1,551 millions produced in the United States. The condition in these and some other states this year, Aug. 1, and the two years previous, Oct. 1, when ripe, is given as follows:

	Aug. Oct. Oct.	'84. '83. '82.	Aug. Oct. Oct.	'84. '83. '82.
Kentucky.....	91 80 102	Iowa.....	103 68 70	
Ohio.....	81 63 87	Missouri.....	102 82 100	
Indiana.....	94 80 92	Kansas.....	101 92 100	
Illinois.....	92 75 72	Nebraska.....	105 87 98	

The present acreage and condition in these states, if the condition is maintained, should give a production this year as follows, compared with the actual production in previous years, in millions of bushels:

	1884.	1883.	1882.	1881.	1880.	1879.
Kentucky.....	89.0	78.2	75.5	51.6	86.0	72.9
Ohio.....	90.4	73.6	93.3	70.8	119.9	111.9
Indiana.....	114.6	95.6	127.5	78.6	99.2	115.5
Illinois.....	250.0	208.8	182.3	176.7	240.5	325.8
Iowa.....	270.3	169.6	175.5	173.3	200.2	275.8
Missouri.....	203.0	161.6	170.4	93.1	160.5	202.5
Nebraska.....	140.0	101.3	82.5	58.9	59.5	65.4
Kansas.....	191.7	172.8	144.5	76.4	106.2	105.7
Total.....	1,357.0	1,056.5	1,031.1	789.4	1,132.0	1,274.7

Thus the prospect, if nothing happens, is for a yield in these eight states which, though 200 millions more than last year, and 568 millions more than in 1881, is but 82 millions (6½ per cent.) more than in the great corn year 1879, when the acreage in Nebraska was not half as great, and that in Kansas 30 per cent. less than now. This production of 1,857 million bushels this year will require an average yield of 34.5 bushels per acre in this territory, where the actual average yield was 35.2 in 1879, and 31 in 1880. Since 1879 the increase in acres has been 3,131,000, but in Iowa, Nebraska and Kansas, where the average yield is largest, the increase has been 4,796,000 acres. In Illinois (where, however, the average yield in good years is nearly as large as anywhere), there has been a decrease in acreage of 9½ per cent. since 1879, in Indiana a slight decrease, in Ohio a decrease of 12½ per cent. The fact that the increase is largely on virgin soil, and where land and climate are best adapted for corn, makes an increase in the average yield more probable.

To reach this production not only must there be no early frost, but the weather must be generally favorable.

An examination of the table will show where the increase is expected to be largest. The prospect is for 550 million bushels in the four states east of the Mississippi this year, against 626 million in 1879 and 451 last year; but west of the Mississippi we have the promise of 807 millions this year, against 549 in 1879 and 605 last year. Compared with the great progress in production in Kansas and Nebraska since 1879, which has been greater in proportion in wheat than in corn, all that has been done further north, in Dakota, is much smaller in amount, and has attracted more attention only because Dakota began then almost with nothing and the rate of its progress has been more rapid.

The wheat movement continues to increase at all the Northwestern markets that receive winter wheat, but declines at Milwaukee and Duluth. The receipts at Chicago have greatly increased, being for the week ending Aug. 9, nearly twice as great as in the previous week, and more than during the entire four weeks ending July 28 or June 28. They cannot be called large, however, being but 22 per cent. of the total wheat receipts of the eight Northwestern markets. Toledo received 29 per cent. and St. Louis 40 per cent. more wheat than Chicago in the week to Aug. 9, showing that comparatively a small part of the winter wheat was seeking a market by way of Chicago, which may now be receiving considerable spring wheat from Nebraska and

Southern Iowa. The total wheat receipts of the eight Northwestern markets in June averaged 781,492 bushels per week. Since then they have been in successive weeks:

July 5. July 12. July 19. July 26. Aug. 2. Aug. 9.
604,167 757,021 988,753 1,385,841 2,112,715 2,586,210

Thus in the last of these weeks the receipts were 23½ per cent. more than the week before, more than in the two weeks ending July 26, and more than in the three weeks ending July 19. They were, however, only 11 per cent. more than in the corresponding week of last year (after a bad crop), and were 48 per cent. more than in 1882, after an exceptionally good crop. For the week to Aug. 16 reports are not complete as yet, but at Chicago the receipts were about 1,110,000, which is 96 per cent. more than the week before, indicating that spring wheat is already coming forward from Nebraska and Iowa.

But while there has been no interruption to the rapid increase from week to week of the wheat receipts of the Northwestern markets, the receipts of the Atlantic ports for the week to Aug. 9 were the smallest for three weeks, and were no less than 30 per cent. less than in the previous week. The wheat receipts of these ports averaged 949,392 in June, and in successive weeks since have been:

Week ending:

July 5. July 12. July 19. July 26. Aug. 2. Aug. 9.
1,034,213 682,288 1,726,704 3,239,770 4,157,219 2,891,893

This indicates that producers hastened to ship winter wheat in fear of a falling market, but it is not by any means sufficient to prove this. The falling-off from the previous week was about the same at New York and Baltimore, and was great also at Philadelphia. For this week ending Aug. 9 and in corresponding weeks of previous years the total Atlantic receipts have been:

1879. 1880. 1881. 1882. 1883. 1884.
6,449,072 5,083,079 2,381,431 4,437,200 2,033,377 2,891,893

Thus while the receipts this year were 42 per cent. more than last year and 21 per cent. more than in 1881—but very unfavorable years for winter wheat—they were 35 per cent. less than in 1882, 43 per cent. less than in 1880, and 55 per cent. less than in 1879. Thus the movement is very light in comparison with previous years of good harvests. This, as we have said before, is the natural result, because the winter wheat, which is the only part of the crop heretofore marketable, is not a good crop this year. This probably has more effect than the low prices in keeping the movement light. When the spring wheat is all threshed, a few weeks later, the movement may equal that of other years of large production.

Since the advance in rail rates, July 21, rates by the Erie Canal have advanced by an important amount, but lake rates very little. The latter were about 1½ cents a bushel for corn and 2 cents for wheat from Chicago to Buffalo; now they are ½ to ¼ cent higher; but the rate from Buffalo to New York by canal has advanced from 3½ cents for wheat to 4½. Grain is now accumulating at Chicago, but there seems to be no haste to forward it.

The crops in the Province of Ontario, where is much the larger part of the farming land of Canada, have turned out exceptionally well. Wheat especially is an exceptionally good crop, and the production is estimated to be 10½ million bushels more than last year. Barley, a very important crop in Canada, large quantities being exported to this country (we have taken as much as 18 millions of it in a single year), is a large crop in the southern counties and a lighter one in the northern, but rains have discolored the grain and that greatly reduces its value. Oats are a good crop. Hay is a much lighter crop than last year; when, with the exception of hay, crops were not good in Canada.

Record of New Railroad Construction.

This number of the *Railroad Gazette* contains information of the laying of track on new railroads as follows:

Chicago, Burlington & Quincy.—The new *Concordia Branch* is extended southwest to Concordia, Kan., 45 miles.

Columbus & Rome.—Extended from Chipley, Ga., north by east to White Sulphur Springs, 5 miles. Gauge, 3 ft.

Cornwall & Mt. Hope.—Extended from Mt. Hope, Pa., southward to Manheim, 6 miles.

Minneapolis & St. Louis.—The *Pacific Division* is extended from Morton, Minn., west by north to Marietta, 81 miles.

New York, Philadelphia & Norfolk.—Extended from the Maryland state line southward to Accomac, Va., 22 miles.

Top-ka, Salina & Western.—Track laid from Council Grove, Kan., west to Wilsey, 12 miles.

Union Pacific.—This company's *Oregon Short Line* is extended from Weiser, Idaho, northwest to Huntington, Oregon, 28 miles, completing the road.

This is a total of 199 miles of new railroad, making 2,104 miles reported to date for the current year. The total track reported laid to the corresponding date for 13 years past is as follows:

	Miles.	Miles.
1884.	2,104	1877.....
1883.	3,078	1876.....
1882.	5,984	1875.....
1881.	3,459	1874.....
1880.	2,851	1873.....
1879.	1,476	1872.....
1878.	1,049	1871.....

These statements include main track only, no account being taken of second tracks or other additional tracks or sidings.

NEW PUBLICATIONS.

Bibliothek des Eisenbahnhuuses. Band I. *Geschichte des Eisenbahnhuuses* (Railroad History): by Dr. Theodor Haberer. Vienna, A. Hartleben, Publisher. 1884. 8vo, pp. vii, 151.

The series of books of which this is the first volume

probably owes its origin to the influence of the Austrian Railroad School in Vienna. It is intended to deal with a great variety of questions. The publishers say in their prospectus: "Our 'Railroad Library,' it is hoped, will meet the wants of railroad men and of all others who have an interest in the development and working of railroads. We propose to furnish the means of obtaining suggestions and instruction whenever and wherever wanted. The most varied departments of railroad knowledge, from economic and political questions on the one hand, to scientific and technical problems on the other, are to be explained by specialists of high reputation in a way which cannot fail to be useful and instructive to all who are in any way connected with railroads."

Two volumes of this series have already appeared—one on Railroad History, which forms the subject of this notice, and one on Railroad Rates, which must be treated separately. If these two may be taken as samples, the books of this series have certain obvious advantages not generally found in German books. They are handsomely gotten up, and they are concise. But we fear that, for American readers at any rate, the subject matter will not be found as practically available as the form under which it appears.

The main trouble is that everything is looked at from a Vienna point of view. In the work before us the whole railroad history of the world, outside of Germany and Austria, is treated in six pages; and neither in those six pages nor anywhere else, except indirectly, is there a word of reference to America. Those six pages are good as far as they go, but of course it is impossible to do any justice to the subject within those limits. Perhaps this is an unfair criticism to make. As an Austrian, Dr. Haberer was of course justified in looking at things from a point of view exclusively Austrian; as a lecturer on railroad law he was justified in giving great prominence to individual pieces of railroad legislation which the outside world cares very little about. But he would have made a great deal better book, and one far more worthy of the name of history, if he had looked more at the growth of railroads among other nations. There are a good many facts which can only be understood by comparing them with other facts. And Dr. Haberer sometimes fails to make that comparison where he could very easily do so. He thus gives his book the air of a chronicle instead of a history.

At the outset, neither Germany nor Austria showed any great enterprise in railroad building. The governments, in general, and especially that of Austria, were decidedly hostile to railroads. To the Austrian government, any new undertakings of this kind seemed to savor of dangerous radicalism. The Emperor, in 1838, made up his mind to sign a railroad charter only on the somewhat dubious ground that "the thing can't maintain itself, anyhow."

We must, however, give Austria the credit of being the first country to enact a comprehensive railroad law. This was in 1838; while England, for instance, had nothing of the same kind till 1845. The Austrian railroad law provided that the railroad charters were to be given for a limited time—fifty years was the period contemplated in this law, but by subsequent enactments it was extended to ninety. A most detailed form of previous application was made obligatory. When the charter was once granted, it secured the company against the building of a parallel road. The rates were to be public. If profits exceeded 15 per cent., the rates must be reduced. Letters were to be conveyed free for the Post Office.

Prussia passed a similar railroad law at the end of the same year. The chief difference was, that instead of a simple expiration of the charter and reversion to the state at the end of a limited period, the Prussian Government reserved the right after a certain number of years to buy up the road on terms specified. These provisions have been much varied since, but the principle of limited time charters has prevailed everywhere. It is said that there is but one railroad on the Continent of Europe—a short line from Hamburg to Bergedorf—which had no sort of time limitation in its charter. There was also an attempt made to introduce the old English idea of competition of different carriers on the same line of rails—of course without success.

Railroads insisted on coming, whether monarchical governments liked them or not; and they did so much good where they came that the governments soon decided that they were a good thing, and gave them paternal assistance—usually in the form of guarantees of interest, sometimes by direct state construction. The accession of Frederick William IV. of Prussia in 1840 marks the beginning of this period—a period of active railroad building which lasted till the revolution of 1848. The events of 1848 and the following years threw all industry into confusion—railroads and governments included. Under these circumstances Prussia and Austria pursued opposite policies. Prussia helped its railroads by measures which increased its control over them. Austria thought to help itself by selling its railroads, generally far below their true value. The Prussian government really understood the importance of its railroads; the Austrian government did not; and one main reason why Austria was beaten by France in 1859 and by Prussia in 1866 was that Austria had not the means of concentrating its troops by rail which Prussia had.

One of the points insisted on by Prussia in the peace which closed the war of 1866 was that Austria should freely allow railroad connections with the rest of Germany. Hitherto she had been very niggardly in that respect, carrying the protective policy to the extent of making it awkward for foreign goods to come in by rail. The minor German states had in many instances pursued a pig-headed policy of the same kind; and all the efforts of the German Railroad Union had not been sufficient to overcome this

opposition. This Union had been founded as early as 1846. Originally made up of Prussian railroads, it soon extended all over Germany; making and supervising agreements for handling of traffic, time allowance, division of risk, forms of way-bill, etc., etc. It was extremely successful in securing unity of method, but it could not do much on points where the governments were directly opposed to it.

The removal of these obstacles in 1866, when the small states were cleared out of the way, and Austria bound by contract not to interfere, was followed by a great increase of railroad building—over 3,000 miles being built in five years, an increase of 35 per cent. About this time they were uneasy under the legal provision against parallel roads, and arranged to do away with it as regards future charters. Of course the evils attendant upon a period of rapid railroad building soon made themselves felt. Construction companies presented themselves under various guises, with the notorious Dr. Strousberg as a leader. The Prussian government tried to meet the evil as well as it could by granting charters for new lines, not to new companies, but to railroads already well established. This was good so far as it went, but even in Germany it did not suffice to meet the evil, while in Austria it was not applied at all. Things went on from bad to worse, ending in the crisis of 1873. The construction companies of that time left such a bad odor that to call a man a "constructor" has ever since been about the worst term of opprobrium which the German language affords.

The reaction which followed this period of speculation was favorable to the development of a state railroad system. The public saw only too clearly certain evils connected with private railroads; and many of the more unfortunate stockholders were ready and glad to sell out.

There can be little doubt that when the German Empire was established, the government hoped that there would be a national railroad system. Interstate commerce was made the subject of several articles in the constitution. None of the actual provisions amounted to very much, but there was a clause of great possible importance, giving the empire power to regulate charges. On the basis of these provisions they tried to enact an imperial railroad law, but the opposition of the smaller states prevented its passage. All that they have actually done, beyond some enactments about public safety, has been to establish an Imperial Railroad Bureau to see that the railroads carry out the constitutional provisions and to investigate alleged abuses. Its executive functions are not very wide.

Defeated in his national railroad projects by the opposition of the smaller states, Bismarck nevertheless held to the principle of state ownership, so that Prussia has within the last few years gained control of nearly all the railroads within her borders. They are under the control of the Minister of Public Works, while a national advisory board of forty members, representing various business interests, gives counsel as to what the public requires of the railroads. The actual management, however, is intrusted to a number of district administrations composed of railroad men, and possessing considerable independence of action.

Austria is moving toward state railroads, but much more slowly. For twenty years she had abandoned the system, and any sudden return would have required more money than the Austrian Treasury could get hold of. Her recent movements in this direction began after the crisis of 1873. This crisis had pretty thoroughly crippled Austrian private enterprise. In fact, it could hardly be otherwise; for the Austrians had gone into the speculation of the years preceding in an utterly reckless and light-headed way. One instance, which our author relates as if it were the most natural thing in the world, will show their greenness in these matters. "The crisis of 1873 brought to light a serious defect in Austrian law. While one concern after another went under, the holders of bonds or debentures were resting quietly in the belief that their interests were secured. But when one and another of these roads became unable to pay their interest, the matter was looked into thoroughly, and it was found that the whole debt was unsecured; for although there were nominal mortgages on the property, these mortgages had no legal authority, because they were not recorded in the manner prescribed by law." Inasmuch as the whole funded railroad indebtedness of Austria seems to have suffered from this flaw, it might be regarded as a discovery of some importance. To be sure, there was a paternal government at hand to make it all right. But if this represents Austrian ways of doing business, Vienna ought to offer a good field for some enterprising American lawyers.

Our author is a thorough believer in the principle of state railroads. Even in the midst of facts illustrating senseless wrong-headedness in the government railroad policy, he reasons on the assumption that the state will manage its lines with intelligence; and where the state railroads are well managed, as seems to be the case in Austria to-day, he welcomes the prospect of every extension of the system. A decided protectionist, he is thoroughly in sympathy with Austria's national development policy, which causes the building of railroads like the Arlberg, and he makes no mention of facts which show its weak points. Some of his judgments are rather astounding. "The building of an unremunerative road is always attended with industrial advantage; the very construction gives employment to a multitude of men who would otherwise have to look out for their daily bread elsewhere," etc.

As may be inferred from this last citation, economy is not his strong point. Perhaps the most serious complaint to be made against the book is, that this side of the subject is so inadequately treated. The most important part of railroad history is probably the influence of railroads upon

trade. This book sometimes tells us what lines of trade were developed; it never gives figures as to quantities, nor tells how quantities are affected by rates. It has little to say of the economic causes which lead traffic to take one line rather than another at critical periods of railroad history. Sometimes it suggests lines of thought of great interest, and then gives us no means of following them up; for instance: "The international grain traffic of the Austrian railroads was quite steady up to the time when speculators took hold of the changes in the demand and supply of grain; from that time decided variations took the place of the previous regularity." This is interesting; but it stands as a mere assertion, no figures or references being given to support it or to make it useful in argument.

But oftentimes these matters are omitted altogether. To take an extreme case at once: in the whole railroad history of central Europe there has been nothing more interesting or important than the fight for business during the last few years between Austrian railroads and German water-routes on the one hand, against German railroads and Austrian water-routes on the other. It is too long a story to go into here; but it shows the tendency of German railroad policy to-day, and the limitations to national power over trade laws, in the very clearest light. Principles are involved which affect the whole question of state control of railroads everywhere, not to say the general theory of protection to home industry. But of all this our author says not a word. Crammed as is the last part of his book with matters of detail, it has little room or strength left for the discussion of things which reach wider and deeper.

Railroad Legislation in Italy.

I.

It seems like going far out of our way to look to Italy for lessons in railroad policy. One might think that the system and the problems connected with it are so different from our own that only mere curiosity could lead us to study its workings. As far as practical usefulness is concerned, we might suppose it to be a mere waste of time.

We should make a great mistake. Events have occurred in Italy in the last few years which have an important bearing on railroad legislation everywhere. A parliamentary commission in Italy a few years ago held the most thorough railroad investigation ever made in the world. As a result of their investigation they concluded that the state ought not to run railroads; that although Italy owned its railroads, it ought at once to charter large private companies to manage them. And they are now occupied with legislation which is to give effect to these ideas. It is the most decided set-back which the growing tendency toward state railroad management has anywhere received.

Nothing in all this is done at haphazard. When people in England or America talk about state railroads, it is generally mere guesswork. But in Italy it is the result of hard-won experience. They have tried state railroads and private railroads both, and they know what they are talking about. In fact, they have tried almost every possible relation between the state and the railroads. Each of three or four main systems received its original charter from a different government. One derived its being from the Emperor of Austria, another from the Pope. Each charter has been amended over and over again. There has been state assistance of every kind—guarantees of interest, advances of capital, subsidies for building, subsidies for running. The state has built some of the roads. Others it has bought and paid for. Others it has bought and not paid for. It has tried various forms of management—direct state action, leased and participated in profits. When an Italian commission speaks of the relation between the state and the railroads, it speaks from experience.

The conclusions of the Italian commission are the work of cautious and responsible men, who are busy carrying them out in the face of great difficulties. There is no room for experiments. The Italian government finds it hard work to make both ends meet, and has no money to spend on mistakes. The railroads are not very profitable at best, and any unwise legislation is liable to bring them to the point where they cannot be run at all.

To understand the present state of things we must look back at Italian railroad history. Up to 1859 Italy was divided into a number of very small states. As far as there were any railroads at all, each state had its own separate system. The systems were not merely independent but isolated; the railroads of Tuscany did not reach those of Rome, those of Rome did not reach those of Naples. They were all local roads in the narrowest sense. The wars from 1859 to 1870 put an end to this state of things. Connecting links were built, and with them came the inevitable tendency to consolidation. But this was not allowed to take its natural course. The through traffic of Italy runs from northwest to southeast; that is, it runs lengthwise of the peninsula, or parallel to the central mountain chain. But the old political divisions ran crosswise. They did not want to see their railroads become intermediate links in a line of through communication; they wanted them to be independent. And besides this local pride, an element of national pride came in also. The men who were planning through routes were foreigners. Italy was herself too poor to go into such enterprises on a large scale; but she was sensitive, and was afraid to see foreign capital gain a strong foothold within her borders. If Rothschild and Talbot had been allowed to carry out their plans, Italy would probably have had a strong and progressive railroad system. At any rate, it would have been organized on the natural lines. But the Italians sacrificed commercial advantage to sentiment—most of it false sentiment at that.

Without going into details, the final result was the consolidation of most of the Italian railroads into four systems—the Upper Italian, the Roman, the so-called Southern (Eastern would be a truer title), and—somewhat later—the system of Calabria and Sicily. The main lines of this division were marked out as early as 1864, and have continued without much change ever since. The principles of consolidation favored by the state have been entirely different from those of other countries. They have consolidated the competing lines and not the connecting ones. It is almost as if New York had one united system of railroads, Pennsylvania a second, and Ohio a third, absolutely distinct from the other two, and with only cumbersome means for interchange of traffic.

Of course this was a wasteful way of doing business. In the first place, the handling of the through business was bad; and secondly, since each road was officered by men from one locality, they could not judge when it was worth while to lower through rates to develop business. But if ever the railroads of any country needed to handle and develop their business with the utmost care, it was the railroads of Italy. In spite of large subsidies from the government, they found it extremely difficult to meet their obligations. In times of commercial distress the conditions of the charters had to be altered; sometimes the government had to come to the rescue with its credit or money.

The lines of Calabria and Sicily were the worst off. They were built but slowly, and could not pay expenses. The government saw themselves forced to choose between giving up the development of this part of the country altogether, or taking the railroads into their own hands. In 1870 they chose the latter alternative; owning or building the roads themselves, but running them through the medium of a company which receives its pay in the form of a percentage of the gross receipts, all expenses being paid by the state. The average annual gross receipts are in the neighborhood of \$2,000 per mile; the operating expenses some \$8,000 per mile. Thus the government loses a thousand dollars a mile annually, besides receiving no interest on the capital invested. And these things seem to improve but slowly.

The Roman railroads did scarcely better, and after many unsuccessful attempts to prop them up by pecuniary assistance, the state in 1873 entered upon a contract to purchase them. But the financial difficulties of the government itself were such that it was not until 1880 that arrangements could be made to fulfill the contract, nor did government take possession till the year 1882.

The Southern Railroad formed a rather surprising exception to the general lack of prosperity. It ran along the coast of the Adriatic, through the poorer districts of Italy; it had no towns of first rate importance on its main route. It was regarded as the most unpromising line in the Kingdom. But it had a tolerably long line in the natural direction of through traffic, having formed an important part in the system proposed by Talbot and Rothschild in 1863; and it was managed by men who knew how to make the most of its advantages. They had dared to take the lead in the matter of tariff reduction, even when violently opposed by the government, and they were rewarded by a growth of business which far exceeded their expectations, and which finally threatened to become a means of pecuniary loss to them. For their subsidy contract was a somewhat peculiar one. When it was made, the company had no idea of ever earning \$5,000 per mile annually; and the contract, as a mere matter of form, provided that after the gross earnings had reached \$5,000 a mile, the subsidy should diminish as fast as the gross earnings increased. But the net earnings never would increase by quite as large a sum as the gross earnings; the subsidy would diminish faster than the net earnings would increase. Thus, every bit of traffic beyond \$5,000 per mile lessened the amount available for the payment of dividends. Such a state of things was bad for business in every way, and could not last. But the government was not willing, at the time, to make any changes in the subsidy contract which should ever render it liable to pay more, and the company was equally set against any changes which might render it liable to receive less. The only way open was for the government to buy out the company, and in 1874 and 1876 contracts to that end were agreed upon, though subsequent events hindered their full execution.

Meantime the government was being drawn into arrangements for the purchase of the railroads in Upper Italy. Here it was not on account of business complications, good or bad, but for political reasons. The countries of north Italy, while still under Austrian rule, had been provided with a tolerably complete system of railroads. These were in the hands of an Austrian company which owned other lines farther to the north and east. When part of its lines passed under the Italian government, the company arranged two separate organizations, one for its Austrian lines, the other for its Italian lines. But of course the same stockholders controlled both organizations; and the two nations, which might at any moment become enemies, disliked to have their territories connected by such intimate financial interests. The company must become Austrian or Italian—one or the other—whichever it was to be, the other part must be bought out and separated from the company. Austria felt that she could not buy up her part of the lines and leave the company Italian. Italy was perhaps no better able than Austria, but she was more enterprising; she undertook to buy up her part, and leave the company Austrian. Matters began to take that direction in 1873. At the end of 1875 the arrangements were practically complete.

At that time the triumph of the state railroad principle in Italy seemed as thorough as it was in Belgium or Germany. For one reason or another each important company had been

led to abandon its chartered rights. The purchases had not been effected, but there were contracts which must soon lead to purchase. After purchase there must apparently come more immediate state interest and control. Few men could suspect what a different turn the practical management of things was soon to take.

It was a conservative ministry that had purchased or arranged to purchase the railroads; and the ministers who took the lead in this matter, Minghetti and Spaventa, undoubtedly intended that the state should run the railroads as well as own them. But political changes prevented their carrying out this part of the programme. They were forced to resign in 1876, and were succeeded by moderate Radicals. In the course of the same year, after a long debate, the Italian Parliament decided that it was unwise for the state at that time to attempt to manage its own railroads directly, and Depretis, the Minister, was requested to prepare a plan under which the state railroads might be given over to private companies for management.

On what terms should this be done? This was a central point in the whole question, and might be answered in two quite distinct ways. Either the state might pay the companies for doing the work, and take what was left itself; or the companies might pay the state for the use of its lines, and take what was left themselves. In the first case the state would take the risk, in the second case the companies. In the first case the company would be a mere agent or employee, in the second case a leaseholder. In the second case the state ownership would be little more than a form, as far as concerns its influence on the practical management of affairs. The partisans of a state railroad system would naturally prefer the first form.

The Conservative ministers in their provisional arrangements had made contracts of the first form. The companies were to be mere agents to manage roads at the risk of the government. A contract in this sense was arranged with the Southern Railroad, though the ministry fell before it could be approved by Parliament. It provided that the working company should be liable for operating expenses, including ordinary repairs, but not for extraordinary repairs or new construction. For repairs and maintenance it was to receive a fixed allowance per mile operated; for train expenses (and profits) it received an allowance for each passenger and each ton of freight, for every mile carried. Further to stimulate its activity, the company was to be allowed a moderate share in any increase of the gross receipts above a certain sum mentioned in the contract.

This system was never carried out. The new Minister, Depretis, preferred the plan of leases. He proposed that there should be two lessee companies, one running the roads on the east coast and their connections, the other those on the west coast; that the lessees should own the rolling stock, buying at a valuation what the state had now in its possession; that they should pay the state (together) a fixed minimum rent of about nine million dollars; with a variety of minor details. This rental represented about 2 per cent. on the cost of the roads. It amounted to 30 per cent. of the estimated minimum gross receipts. The state was to have a considerable interest in any excess of gross receipts above this minimum.

All things considered, this was a good plan. Many of its ideas are incorporated in the bill now pending in Parliament. But, for the time being, Depretis had no better luck than his predecessor. The extreme Radicals turned out the moderate Radicals at this stage of events, just as two years before the moderate Radicals had turned out the Conservatives. And the extreme Radicals were so far under the influence of socialistic ideas that the principle of state railroad management found favor with many of them. But they were not quite ready for any action, and in July, 1878, referred the whole matter to a special commission. This was the commission that has done such remarkable work. That work and its results must be made the subject of another article.

ARTHUR T. HADLEY.

TECHNICAL.

Explosives at the Vosburg Tunnel.

Messrs. Lentz & Co., contractors for the new Vosburg tunnel on the Lehigh Valley road, have used the Rackarock powder in excavating the tunnel, their opinion being that it did excellent execution in blasting, and was less injurious to the health of the men.

Brighton Electric Railroad.

From the London *Engineer* we take the following concerning this road, reducing the figures for cost to our currency:

"Some time since we gave a short account of the electric railway made and worked along the Brighton foreshore by Mr. M. Volk. Since a few days before Easter this line as laid out this year has been in successful operation, and some figures have been obtained which must be looked upon by electrical engineers and the public as of much importance, as well as of considerable interest. As we have already said, the line is built and worked under conditions which are in some respects unique. The corporation granted to Mr. Volk, for himself, and not for any syndicate or company, the right to construct and work an electric railway along the upper part of the beach. Mr. Volk constructed about a mile of light single railway, and put down one 8-horse gas engine, and one Siemens generator and exciter. With this plant, and one car to carry 30 people, and with the necessary small terminal structures, one of which is not yet finished, no less than 34,000 passengers have been carried during eight weeks. The line includes 230 yards on a gradient of 1 in 100; 100 yards with gradient of 1 in 45; 50 yards at 1 in 16; 50 yards at 1 in 30; and 200 yards at 1 in 150; the remainder being nearly level. The car is fitted with an epicycloidal driving pulley, by means of which the gradient of 1 in 16 is worked at one-third the usual speed, eight miles an hour, the other gradients being worked direct. This gear is brought into action by a simple friction clutch, and is very simple. Along the level the power consumed is but 1.75 brake horse-power. The working of the

line has been most satisfactory, and the financial results are very encouraging. The whole cost of the line and equipment was \$12,500, exclusive of whatever charge the owner, Mr. Volk, would add to this as electrical engineer of the work, which, of course, occupied a good deal of time, and included the design of the car, station, etc. The gross earnings have been \$1,351, or \$168 per week, while the expenses have been \$87 per week, leaving a profit of \$81 per week. The expenses per week are as under, including the cost of about 1,600 cubic feet of gas per day at 78 cents per 1,000 cubic feet:

Gas.	\$7.27
Boy, driving engine	2.90
Car driver	5.80
Conductor	5.80
Station clerks	7.27
Lineman	5.10
Laborer	4.37
Electrical and general management	16.98
Repairs	4.85
Depreciation and interest	24.25
Rent of arch	2.41
Total	\$87.00

"This is for one car running about 500 miles per week, and seating 30 passengers. It will be seen that the working expenses are small, but are such as can be repeated for any similar undertaking, which does not belong to a limited company with its numerous salaried officers. A second car is about to be added, a turnout being provided at mid-length of the line. Though this will double the carrying capacity, the working expenses will be increased to but a small amount, as may be gathered from the above figures. The popularity of the line may be gathered from the figures we have given, and although only a mile in length, this railway shows what may be done with plant economically and carefully worked. It shows that when the capital employed is only that necessary for the work, an excellent profit may be made, but with anything like the public company ideas of capital, the profit would be lost. From it, however, a much wider lesson may be gathered. It may, for instance, be seen what is done on this one mile, which, however, will probably be increased to two miles, may be repeated on any number of miles, and for large traffic much lighter stock can be used than can or is used on steam lines, and the cost of maintenance should be small."

General Railroad News.

MEETINGS AND ANNOUNCEMENTS.

Meetings.

Meetings will be held as follows:

Northern Pacific, annual meeting, at the office in New York, Sept. 18.

Dividends.

Dividends have been declared as follows:

Central of New Jersey (leased to Philadelphia & Reading), 1½ per cent., quarterly, payable Sept. 1.

Chicago, Burlington & Quincy, 2 per cent., quarterly, payable Sept. 15, to stockholders of record Aug. 23.

Railroad and Technical Conventions.

Meetings and conventions of railroad associations and technical societies will be held as follows:

Master Car-Painters' Association, annual convention, in Boston, on Wednesday, Sept. 3. A full programme was given in our issue for Aug. 1.

Road-Masters' Association of America, annual convention, in Indianapolis, Ind., on Wednesday, Sept. 10.

Association of American Railroad Superintendents, semi-annual meeting, in Boston, on Tuesday, Sept. 16.

National Association of General Passenger & Ticket Agents, semi-annual convention, in Boston, on Tuesday, Sept. 16.

New England Railroad Club, first monthly meeting for the season, at the rooms in the Boston & Albany station in Boston, on Wednesday, Sept. 24.

New England Road-Masters' Association, annual convention, at White River Junction, Vt., on Wednesday, Oct. 8.

General Time Convention, fall meeting, at the Continental Hotel, Philadelphia, on Thursday, Oct. 9.

Southern Time Convention, fall meeting, at No. 46 Bond street, New York, on Wednesday, Oct. 15.

American Street Railway Association, annual convention, in New York, on Wednesday, Oct. 15.

Western Association of General Passenger & Ticket Agents.

At the meeting in St. Paul last week no important business was transacted. Several proposals for changes in the territory of the Association were considered but not acted upon. The Association adjourned to meet in Omaha in November. After the meeting most of the members joined in an excursion to Lake Minnetonka.

Western Society of Engineers.

The 19th meeting was held at the Society rooms in Chicago, on Tuesday, Aug. 5, 1884, at 4 p. m., President Gregier in the chair; G. A. M. Liljencrantz Secretary *pro tem.*

The Committee on Revision of Constitution and By Laws made an informal report, which was discussed by the members present. The committee then asked for further time, which was granted.

Traveling Passenger Agents' Association.

The annual meeting of the International Association of Traveling Passenger Agents was held in Denver, Col., Aug. 13. The Secretary's report showed 278 members in good standing. It was resolved to increase the annual dues from \$2 to \$5, and other routine business was satisfactorily disposed of. At the conclusion of the meeting most of the members started on an excursion to various points on the Denver & Rio Grande road.

Mr. James Reed, the orator of the meeting, read a business-like paper, in which he urged as one of the most important questions for the convention the maintenance of tariff rates as they are given to traveling men by the general agent. With uniform rates at all times, each agent would get his share and enrich the company he worked for. He maintained that the association was a great benefit and mentioned among the advantages a great saving to the companies in advertising.

At the business session a lengthy discussion occurred as to the qualification of several applicants who were refused because not being *bona-fide* traveling passenger agents. Boston was chosen as the place for holding the next convention.

Road-masters' Association of America.

The second annual meeting of this association is to be held in Indianapolis on Wednesday, Sept. 10. The headquarters of the association will be at the New Denison Hotel. The local committee has concluded arrangements for the entertainment of delegates, who will receive special rates at the hotels and other advantages. The committee on subjects for

discussion has prepared the following list of topics, which will be submitted to the association:

1. Surfacing—Manner of filling in and finishing with different kinds of ballast.
2. Frogs and switches.
3. Creeping of rails—cause and prevention.
4. All life-saving appliances, especially foot guards for frogs and switches.
5. Elevation of curves—gauging same.
6. The effect of unevenly gauged wheels and worn wheels upon the rails, frogs and switches.
7. The best form and weight of rails for present rolling stock.

Institute of Mining Engineers.

The 40th meeting of the American Institute of Mining Engineers will be held in Philadelphia, beginning Tuesday Sept. 2. The headquarters of the association will be at the St. George's Hotel, corner Broad and Walnut streets. It is suggested that, as the Philadelphia hotels will probably be very full at that time, members intending to be present should engage rooms as soon as possible. Through the courtesy of the Engineers' Club of Philadelphia the rooms of that club at No. 1523 Chestnut st. have been made the headquarters of the Executive Committee of the Institute, and some of the members of the Committee will be in constant attendance at those rooms.

The programme for the meeting is as follows:

Tuesday, Sept. 2.—The members of the Institution are invited to attend the formal opening of the International Exposition at noon.

Wednesday, Sept. 3.—Business sessions will be held at 10 a. m. and 2 p. m. At 4 p. m. members will assemble for an excursion and tea.

Thursday, Sept. 4.—Members of the Institute are invited to attend the opening general session of the American Association for the Advancement of Science, at the Academy of Music, at 10 a. m., and also a lecture before the same Association at 8 p. m. At 2 p. m. the business session of the Institute will be held.

Friday, Sept. 5.—A business session will be held at 10 a. m. At 8 p. m. the Institute is invited to attend the general session of the American Association, and to hear the annual address by the President of that association. After the conclusion of the address a reception will be given by the American Association, to which members of the Institute are invited, and at which it is expected that delegates will be present from the British Association for the Advancement of Science, the Royal Society of Canada, and other scientific associations.

Saturday, Sept. 6.—Members will join in an excursion to the anthracite coal region, tendered by the Philadelphia & Reading Railroad Co. The return will be made by way of Mauch Chunk, where members may remain over Sunday if they desire.

The Local Executive Committee in Philadelphia is as follows: John Birkinbine, Chairman; Charles A. Ashburner, Secretary; Theodore B. Rand, Treasurer; Eckley B. Coxe, W. E. C. Coxe, Henry S. Drinker, William Lorenz, Percival Roberts, Jr., S. B. Whiting.

Baltimore & Ohio Employees' Relief Association.

The July sheet of this Association gives the following statement of benefits paid to members during the month: Main Stem, Transportation Department, 111; Machinery Department, 221; Road Department, 87; Trans Ohio divisions, 138; Pittsburgh Division, 50; physicians' bills, 133; total, 740.

General order No. 5, accompanying the July sheet, is as follows:

"The following named appointments of the assistant medical examiners created by Circular No. 9, dated July 15, 1884, from the office of the second Vice-President, are hereby announced:

"First District.—Baltimore, Main Stem and Branches to Harper's Ferry. Dr. J. F. Perkins, Assistant Medical Examiner; headquarters, office of Relief Association, Baltimore.

"Second District.—Main Stem and Branches west of Harper's Ferry, including the Valley Branch and excluding the Fourth Division. Dr. John Parsons, Assistant Medical Examiner; headquarters, Cumberland, Md.

"Third District.—Pittsburgh Division and Branches. Dr. Jos. F. Tearney, Assistant Medical Examiner; headquarters, Connellsburg, Pa.

"Fourth District.—Fourth Division, Trans-Ohio Division and branches east of, and not including, Chicago Junction. Dr. W. J. Cole, Assistant Medical Examiner; headquarters, Newark, O.

"Fifth District.—Lake Erie Division north of, and including, Chicago Junction; Chicago Division. Dr. John W. Harris, Assistant Medical Examiner; headquarters, Garrett, Ind.

"Assistant medical examiners will report direct to the Secretary of the Relief Association at Baltimore. They will comply strictly with the instructions contained in said Circular No. 9, and it is made their duty to report any violation of said circular, and of other executive orders relating to the employment of labor and to matters affecting the interests of the Baltimore & Ohio Railroad Co. and of the Relief Association. Assistant medical examiners will see that all the company's officials are made acquainted with the instructions regarding the examinations of those seeking employment, and will do all in their power to facilitate and promote the company's interests in that connection.

"It is made the duty of the assistant medical examiners, to exercise rigid supervision over the company's property of all descriptions, to the extent of noting and reporting to this office, the first of each month, everything affecting the health of employees, the sanitary condition of stops, the comfort, safety and welfare of passengers, and of live stock in transit. By direction of the President *pro tem.*, the assistant medical examiners are instructed to pay special attention to the condition of all stations, waiting rooms, closets, yards, and, generally, their surroundings; and to submit to this office, with their sanitary reports, such suggestions as, in their judgment, will promote the interests of the service.

"Nothing in the foregoing order is intended to change or annul the existing status and duties of the medical examiners of the Association."

General order No. 6 announces the election of Dr. S. R. Barr as Secretary of the Association.

Southern Railway & Steamship Association.

The Executive Committee of this association met pursuant to call in New York, July 30. The call for the meeting specified its objects as the adoption of a uniform bill of lading, the pooling of through merchandise business from the interior to Eastern points as well as from the ports to Southern competitive points, whether coming by rail or steamer; also the pooling of all interior competitive merchandise and cotton going east from Southern points; also the question of cotton rates and differences and any other questions which might be referred from the Rate Committee. At the meeting there were present all the members except Messrs. R. A. Anderson and J. W. Thomas. There were also present the Arbitrators of the association, several other members and the members of the Rate Committee.

The subject of a uniform bill of lading was brought up by

a report from the Rate Committee submitting the form for such bill. It was discussed at considerable length, and action was finally deferred to the next meeting in order to allow the members to examine the form more fully. The Secretary was instructed to send a copy of the form to each member of the association.

The question of pooling business from interior to eastern points was taken up and discussed at length. No action was taken, however, but the General Commissioner was requested to prepare a table for the next meeting stating what particular business he recommends to be pooled and the plan for dividing such business.

The question of pooling the business to eastern ports by sail or steamer was next discussed, but was deferred to a future meeting. The same course was taken in regard to pooling merchandise from the South.

The question of cotton rates and divisions was next discussed, and the following resolution was unanimously adopted:

"Resolved, That the Commissioner be instructed to examine into shipments of cotton from pool points, on combination of locals, and when such shipments are ascertained to be through shipments, the same are to be pooled through to destination."

A resolution fixing differentials on cotton between Norfolk and Baltimore at 9 instead of 11 cents was lost, and on demand of Mr. Rives the question was sent to the Board of Arbitration.

Mr. Fink stated that he had intended, at this meeting, to ask for a revision of the Atlanta and Macon cotton pools, but would defer the same until some future meeting.

The following resolutions, offered by Mr. Raoul, and seconded by Mr. Fink, were adopted unanimously:

"Resolved, that Selma and Montgomery cotton be pooled, said pools to be subject to abrogation on the same terms, and under the same rule, as may be found to exist in cases of other pooled points: for example, Atlanta and Macon."

"Resolved, that the question of divisions be referred to the general freight agents of the lines in interest; and, in case of their failure to agree, the case to go to the Board of Arbitration according to the rules of the association—the decision of the board to take effect Sept. 1, 1884, whether the decision is rendered previous to or after that date."

Mr. Fink spoke of the manner of making subdivisions of allotments by the Commissioner, and the form of accounts surrendered.

The Commissioner made a statement in regard to the same, and asked that a committee be appointed to examine the methods, reports, etc.

Mr. Smith moved that the question be referred to a committee consisting of Messrs. Ogden, Haas, Whitehead, Drysey and Brown; and that they investigate the methods and report to the Executive Committee.

The motion was seconded by Mr. Raoul and carried.

The question of free delivery, or delivery at store doors, was brought up by the General Commissioner, and the proceedings of an informal meeting, held at the office of the association on July 23, 1883, was read by the Secretary. After the question had been discussed at some length Mr. Scott moved that it is the sense of the committee that the custom of free delivery should be abolished at all points. Carried.

The Executive Committee then adjourned.

RATE COMMITTEE MEETING.

At a meeting of the Rate Committee held in New York on the same date there was a full attendance. A number of changes were made in classifications, and it was resolved to continue the cotton rates of last season.

The question of the liability of a carrier for fire while cotton was in compress en route was discussed at length, and on motion was postponed for the purpose of obtaining legal opinion. A resolution was passed to the effect that where transportation lines reserved the right to compress at their option, it is unreasonable for shippers to assume the risk of fire while at the compress. The form for a uniform bill of lading was finally adopted and sent to the Executive Committee for its action.

ELECTIONS AND APPOINTMENTS.

Baltimore & Ohio Employes' Relief Association.—Formal notice is given of the election of Dr. S. R. Barr to the position of Secretary of this Association. Dr. Barr was chosen at a meeting of the Committee of Management held on July 22 last.

Boston & Maine.—The following circular from General Superintendent James T. Furber has been issued:

"The department heretofore known as Road Department with road-masters in charge is hereby abolished, and a new department known as the Maintenance of Way Department is created.

"Mr. John Bailey has been appointed Master of Maintenance of Way, and Mr. Gorham P. Faucon and Mr. Edward A. Smith have been appointed Assistant Masters of Maintenance of Way.

"The Master of Maintenance of Way will have charge of the road, bridges and buildings of this road, and will have entire control of all carpenters, bridge-builders, painters and truckmen employed in the Maintenance of Way Department. All material used in this department must be ordered by the Master of Maintenance of Way, through the Purchasing Agent, and the Purchasing Agent will respect no requisitions for this department unless so ordered."

Chicago & Northwestern.—W. H. Stennett, General Passenger Agent, makes the following announcement: "E. A. Holbrook, late General Eastern Passenger Agent of this company, having resigned, the office is abolished. Until further notice the passenger interests of this company in the field lately occupied by Mr. Holbrook will be cared for as follows: New York city, Brooklyn, Jersey City, Hoboken and vicinity, by Maurice F. Sullivan, City Passenger Agent, 409 Broadway, New York city; New York state, excepting New York city and vicinity, by E. B. Spain, Traveling Passenger Agent, 12 East Seneca street, Buffalo, N. Y.; New England, by F. H. Melendy, New England Passenger Agent, 5 State street, Boston, Mass.; New Jersey, Pennsylvania, Delaware, Maryland, Virginia and West Virginia, by H. A. Gross, Traveling Passenger Agent, 6 West King street, Lancaster, Pa. Commissions on ticket sales will be paid from this office, hence all commission vouchers should be sent here promptly after the close of each month."

Denver & Rio Grande Western.—The United States Circuit Court has appointed Mr. W. H. Bancroft Receiver. He is now Superintendent of the road.

Eastern & Western Air Line.—The officers of this new Pennsylvania company are: President, H. A. Schwandt, Pittsburgh; Directors, W. A. Harlan, James H. Murdoch, Pittsburgh, Pa.; W. C. Mobley, Parker, Pa.; S. G. Merrill, Mansfield, N. Y.; G. E. Hubbard, T. W. Osborne, Waldorf H. Phillips, New York.

Fargo, Missouri River & Pacific.—At a recent meeting of the directors the following officers were elected: C. A. Roberts, President; Hugh Moore, Vice-President; W. A.

Kindred, Treasurer; E. S. Tyler, Secretary. Office at Fargo, Dakota.

Memphis, Selma & Brunswick.—The United States Circuit Court has appointed Mr. M. Erb Receiver, on application of the judgment creditors.

New Brunswick.—At the recent annual meeting of this company the following officers were elected: Samuel Thorne, President; Isaac Burpee, Vice-President; J. E. R. Burpee, General Manager; A. Seely, Secretary and Treasurer.

New York, Lake Erie & Western.—It is understood that the committee of the board of directors to which the request of Mr. Jewett for relief from some of his duties was deferred, has agreed upon a plan and will recommend that Mr. John King, Jr., on Baltimore be elected Assistant President. It is understood that Mr. King will succeed Mr. Jewett as President of the company, probably at the next annual meeting. Mr. King is well known as a railroad manager, having been for 28 years with the Baltimore & Ohio Co. He entered the service of that company as ticket agent in 1854, and was shortly afterward made Paymaster, and in 1857 Auditor of the company. A few years later he became General Freight Agent, and in 1867 Vice-President of the company, holding that office until 1881, when he retired on account of his health. In addition to his duties as Vice-President of the Baltimore & Ohio Mr. King also served as Receiver of the Marietta & Cincinnati and of the Ohio & Mississippi roads. This will not be the first time that the Erie has gone to the Baltimore & Ohio for its higher officers.

Mr. King was formally elected Assistant President at a meeting of the board held Aug. 19.

Oregon & California.—The following are now the officers of this company: Henry Villard, President; Charles E. Brothman, Vice-President; R. Koehler, Second Vice-President and Manager; George H. Andrews, Secretary and Treasurer; J. Bennett, Superintendent; E. P. Rogers, General Freight and Passenger Agent; Oscar E. Hunt, Auditor of Freight and Passenger Receipts; W. T. Bodley, Purchasing Agent.

Owensboro & Nashville.—Mr. T. Mahoney is appointed Road-master of this road, vice R. C. Hunt, resigned. Appointment taking effect Aug. 1, 1884.

Peoria, Decatur & Evansville.—Mr. T. A. Allen has been appointed Civil Engineer on this road. Mr. Allen was previously Road-master on the Chicago & Northwestern.

Philadelphia & Reading.—Mr. William W. Stearns, Superintendent of the Central Railroad Division, has been made Superintendent of the New Jersey Southern Division also, in place of Rufus Blodgett, who has been appointed Superintendent of the New York & Long Branch Railroad.

Portsmouth & Dover.—At a meeting of the stockholders held in Portsmouth, N. H., Aug. 13, the following directors were chosen: Frank Jones, Daniel Marcy, Calvin Page, J. Albert Walker, F. A. Christie, J. E. Lothrop and C. P. Sawyer. Frank Jones was chosen President, Calvin Page Clerk and George L. Treadwell Treasurer. The road is leased to the Eastern Railroad Company.

St. Johnsbury & Lake Champlain.—At the annual meeting of this company in St. Johnsbury, Vt., Aug. 13, the following directors were elected: Horace Fairbanks, Franklin Fairbanks, A. B. Harris, George W. Hender, Thomas Congessall, A. B. Jewett, Bradley Barlow, H. E. Folsom, W. H. Fairbanks. At a subsequent meeting of the directors, A. B. Harris, of Springfield, Mass., was elected President; Franklin Fairbanks, Vice-President; W. H. Fairbanks, Secretary and Treasurer; A. B. Harris, A. B. Jewett, Horace Fairbanks, Executive Committee.

San Antonio & Aransas Pass.—The officers of this new company are: President, C. Belknap; Vice-President, W. H. Maverry; Secretary, George H. Calliger; Treasurer, Daniel Sullivan. Office in San Antonio, Texas.

South Bend Belt.—The following are the officers of this new company: Thos. B. Inness, President; Thos. S. Stenfield, Vice-President; Andrew Anderson, Secretary; John C. Knoblock, Treasurer; A. B. Fitch, Chief Engineer. Office in South Bend, Indiana.

Traveling Passenger Agents' Association.—At the meeting in Denver, Col., Aug. 18, the following officers were elected: President, A. S. Webster, Buffalo; Vice-President, J. C. Shaw, Savannah; Secretary and Treasurer, W. B. Linney, Indianapolis; First Assistant Secretary, E. L. Patterson, Cleveland; Second Assistant Secretary, F. D. Bush, Nashville.

Valley (Ohio).—Mr. Isaac Reynolds (late General Live Stock Agent of the Lake Shore & Michigan Southern road), has been appointed General Superintendent of this road, vice James E. Turk, resigned.

Wabash, St. Louis & Pacific.—A circular from the General Traffic Manager announces the following appointments of commercial and division freight agents with supervision over the territory mentioned: Mr. W. H. Knight, Commercial Agent, Detroit Mich., in charge of the freight and passenger business at Detroit, and including the line to Butler, Ind. (not including Butler); Mr. J. M. Osborn, Commercial Agent, Toledo, Ohio, in charge of the freight business at Toledo and including the line from Toledo to Fort Wayne, Ind., (not including Fort Wayne), with general supervision of business originating in the Ohio River district; Mr. C. L. Wellington, Assistant General freight Agent, Chicago, Ill., in charge of the company's interests at that point, and in the North and East.

Mr. E. O. Hudson, Commercial Agent, St. Louis, Mo., in charge of the freight traffic at St. Louis.

Mr. W. H. Hutchins, Commercial Agent, Kansas City, Mo., in charge of the freight traffic at Kansas City.

Mr. H. A. Russell, Commercial Agent, St. Joseph, Mo., in charge of the freight traffic at St. Joseph.

Mr. F. M. Gault, Commercial Agent, Council Bluffs, Ia., in charge of the freight traffic at Council Bluffs and Omaha.

Mr. N. S. Pennington, Commercial Agent, Cairo, Ill., in charge of the freight business at Cairo, and including the line Cairo to Vincennes, Ind., inclusive.

Mr. John Shutt, Agent, Danville, Ill., in charge of the freight business at Danville, and including the line Danville to St. Francisville, Ill.

Mr. S. B. Sweet, Division Freight Agent, Peru, Ind., in charge of the freight business, Fort Wayne to Danville, including the Covington Branch, Butler to Logansport, and from Michigan City to Indianapolis.

Mr. W. S. Spiers, Division Freight Agent, Peoria, Ill., with supervision of the freight traffic over the lines, State Line to Keokuk, Peoria to Jacksonville, Streator to Strawn, Strawn to Chicago and La Harpe to Burlington. Also, with supervision over the business to and from Hannibal, Quincy, Keokuk and Burlington and the East.

Mr. S. B. Knight, Division Freight Agent, Decatur, Ill., with supervision of the freight traffic over the lines, East St. Louis to Decatur, Decatur to Danville, Bement to Alton and Effingham, Bement to Strawn, Sidney to White Heath, White Heath to Decatur and Le Roy to West Lebanon.

Mr. H. D. Gould, Division Freight Agent, Springfield, Ill., with supervision of the freight traffic over the lines, Decatur to Quincy and Elavaston (not including Decatur and Quincy), Bluff to East Hannibal, Havana to White Heath, Springfield to Havana and Bates to Grafton.

Mr. W. B. Jennings, Division Freight Agent, Moberly, Mo., with supervision of the freight traffic over the lines, St. Louis to Kansas City, Centralia to Columbia, Salisbury to Glasgow, Lexington to St. Joseph, Roseberry to Clarinda and Brunswick to Council Bluff.

Mr. G. McFadden, Division Freight Agent, Centreville, Ia., with supervision of the freight traffic over the lines Keokuk to Des Moines (not including Des Moines and business between Keokuk and the East), Centreville to Humeon, Humeon to Shenandoah and Moberly to Ottumwa.

Mr. C. S. Henry, Commercial Agent, Quincy, Ill., in charge of the freight and passenger business at Quincy (excluding the line Quincy to Trenton, Mo.).

Mr. C. F. Meek, Division Freight Agent, Des Moines, Ia., with supervision of the freight traffic at Des Moines and including the line Des Moines to Fonda.

PERSONAL.

—Mr. T. S. Davant has declined the office of General Freight and Passenger Agent of the Louisville, New Orleans & Texas road, which was recently offered to him. It is reported that he has been offered an important position on the East Tennessee, Virginia & Georgia road.

—Mr. G. R. Nash, for some years past General Manager of the Detroit, Grand Haven & Milwaukee road, having been transferred to another office on the Grand Trunk Railroad at Montreal, a number of his Detroit friends recently presented him with an elegant clock, and at the same time presented Mrs. Nash with some valuable silverware.

—Major W. W. Vass is probably the oldest railroad officer in continuous service in the United States, having been with the Raleigh & Gaston Railroad Co. for nearly 50 years. Most of that time he has been Secretary and Treasurer of the company, but for two years served as President. Major Vass is still active, enjoys good health, and, barring accidents, expects to serve for a number of years longer.

—Ex-Governor James D. Porter states that he will retire from the office of President of the Nashville, Chattanooga & St. Louis Co. at the approaching annual meeting. His retirement, it is understood, is in consequence of a disagreement with the management of the Louisville & Nashville Co., which holds the controlling interest in the Nashville, Chattanooga & St. Louis. Governor Porter has for many years been a stockholder and director in the road, and has been President for several years.

TRAFFIC AND EARNINGS.

Railroad Earnings.

Earnings for various periods are reported as follows:

Seven months ending July 31:

	1884.	1883.	Inc. or Dec.	P. C.
Ala. Gt. South...	\$503,147	\$553,004	I. 40,143	7.2
Char., Col. & A...	394,778	440,504	D. 41,786	9.5
Cin., N. O. & T. P...	1,430,673	1,385,830	I. 44,843	3.2
Cin., W. & Balt...	933,580	1,012,760	D. 79,180	7.8
Col. & Greenville...	329,735	401,868	D. 72,133	17.9
Iles M. & Ft. D...	170,600	161,633	D. 18,036	11.1
Fla. Ry. & N. C...	587,123	500,563	I. 81,560	16.1
Houston, E. & W. Tex...	149,657	169,611	D. 19,954	18.1
Kansas City, Ft. Scott, Col. & Gulf...	1,343,834	1,023,314	I. 320,520	31.3
Kan City, Spr. & Mem...	648,626	.....	.....	.....
Kentucky Cent...	461,506	426,560	I. 35,008	8.2
Marq., H. & O...	488,36	400,417	I. 87,619	21.8
Mexican Cent...	1,602,265	1,007,070	I. 505,186	46.0
N. O. & Nor' east...	314,597	47,666	I. 166,931	350.2
R. ch. & Dan...	2,076,025	2,037,088	I. 38,937	1.9
St. L. A. & T. H. Main Line...	761,165	790,070	D. 29,505	3.7
St. L. A. & T. H. Belleville Line...	424,527	448,908	D. 24,381	5.4
Vicksburg & Mer...	255,921	259,081	D. 3,160	1.2
Vicks., S. & Tex...	73,205	40,929	I. 32,276	79.4
Virginia Midland...	884,010	884,471	D. 19,461	2.2
Western N. C...	226,053	176,917	D. 49,736	28.1

Six months ending June 30:

Boston & Albany...	\$38,041,115	.....	.....	.....
Net earnings...	1,047,412	.....	.....	.....
E. Ten., Va. & G...	1,864,278	\$1,823,290	I. \$28,988	1.6
Net earnings...	627,662	637,307	D. 9,445	1.5
L. Rock & Ft. S...	230,945	242,938	D. 5,963	2.5
Net earnings...	73,385	73,714	D. 329	0.4
L. R. M. & T. C...	15,163	185,46	D. 33,31	18.0
Union Pacific...	11,497,179	12,969,723	D. 1,472,544	11.3
Net earnings...	4,289,913	6,397,474	D. 2,097,561	32.8

Month of June:

Central Pacific...	\$1,043,218	\$2,120,226	D. \$186,008	8.8
Net earnings...	540,780	858,957	D. 318,177	37.0
Ches., O. & S. W...	257,201	323,845	D. 65,584	20.5
Net earnings...	56,354	114,087	D. 57,733	50.6
Ches., O. & S. W...	14,276	.....	.....	.....
Eliz., Lex. & B. S...	58,055	56,022	I. 2,033	3.6
Net earnings...	17,328	21		

Grain Movement.

For the week ending Aug. 9, receipts and shipments of grain of all kinds at the eight reporting Northwestern markets and receipts at the seven Atlantic ports have been, in bushels, for the past nine years:

Northwestern shipments.		P. c.	Atlantic.
Year.	Receipts.	Total.	By rail.
1876.	3,926,489	3,764,548	1,614,256
1877.	5,455,322	4,426,953	933,691
1878.	8,147,091	5,328,243	1,497,000
1879.	6,268,777	6,335,513	1,705,337
1880.	7,043,310	6,635,981	2,105,119
1881.	6,685,745	5,848,709	2,079,820
1882.	3,503,366	3,931,156	1,588,722
1883.	5,565,206	4,553,134	1,574,770
1884.	5,324,063	4,110,857	1,380,437
			33.6
			3,537,862

Thus the receipts of the Northwestern markets for the week this year were 240,000 bushels less than in the corresponding week of last year, 1,821,000 more than in 1882, and less than in any previous year since 1876. They were, however, 958,000 bushels more than in the previous week of this year, and were the largest this year with the exception of the first week of June. The increase over the previous week was chiefly at Chicago and Peoria, but there was some increase everywhere else except at Milwaukee.

The shipments of these markets were a little more than in 1882, but with that exception were smaller than in any corresponding week since 1876. They were, however, 622,000 bushels more than in the previous week of this year, and were the largest since June. The rail shipments were 190,000 bushels more than the week before, and were exceeded in but two weeks under the 20-cent rate, but were not much more than half the average weekly shipments under the 15-cent rate. Compared with corresponding weeks of previous years, they were the smallest since 1877. The shipments down the Mississippi were 106,426 bushels (2.6 per cent. of the whole).

The Atlantic receipts for the week were smaller than in any corresponding week since 1876. They were but 9 per cent. less than last year, but were third less than in 1882, and not half as great as in 1879 and 1880. They were a third less than the week before. The receipts of all grains but wheat were singularly small in this week.

Exports of Atlantic ports in this week to Aug. 9 have been:

1880.	1881.	1882.	1883.	1884.
Flour, bbls.	152,322	93,510	150,882	106,766
Grain, bu.	7,146,712	4,176,002	4,271,746	3,100,121

Total, bu. 7,832,161 4,507,397 4,950,445 3,580,568 2,008,552

Thus the exports this year were 41 per cent. less than last year, 57½ per cent. less than in 1882, 54 per cent. less than in 1881, and 73 per cent. less than in 1880. The grain exports were a million bushels (40 per cent.) less than they were the week before, when they were smaller than in the previous week. It is probable that they were exceptionally small. The decrease from the previous week was wholly in wheat.

San Francisco exports for July, the first month of the California crop year, were as follows, flour in barrels and wheat in bushels, flour being reduced to wheat in the totals:

1884.	1883.	Decrease.	P. c.
Flour.	89,292	112,956	13,664
Grain.	715,640	891,300	175,660

Total, bushels. 1,132,100 1,406,080 243,980 17.4

Exports of California barley by sea in July were 47,681 cents, against 38,130 cents in July, 1883, an increase of 9,551 cents, or 25.1 per cent.

Coal.

Coal tonnages for the week ending Aug. 9 are reported as follows:

1884.	1883.	Inc. or Dec.	P. c.
Anthracite.	86,671	597,957	1. 208,514 34.9
Eastern bituminous.	179,452	177,447	1. 2,005 1.1
Coke.	58,096	55,218	1. 2,878 5.2

The output of anthracite for August promises to be very large, and it is said that stocks are accumulating rapidly at tidewater. It is now understood that a stoppage will be ordered for the first week in September; whether there will be any further restriction of production in September is not decided.

The coal tonnage of the Pennsylvania Railroad for the week ending Aug. 9 was:

Coal.	Coke.	Total.
Line of road.	141,941	52,487
From other lines.	63,360	5,609
Total.	204,401	58,096

The total tonnage this year to Aug. 9 was 7,908,286 tons, against 7,214,128 tons to the corresponding date last year; an increase of 694,148 tons, or 9.6 per cent.

Cumberland coal shipments for the week ending Aug. 16, were 65,045 tons. The total shipments this year to Aug. 16 were 1,708,932 tons, against 1,494,909 tons to the corresponding date last year; an increase of 209,023 tons, or 14.0 per cent.

Anthracite coal tonnages for July and the seven months to July 31 are given as follows by Mr. John H. Jones, the Official Accountant, the statement including the entire production of anthracite coal, excepting that consumed by employees and for steam and heating purposes about the mines:

July.	—Seven months.	1883.
Phila. & Read.	1884.	1883.
Lehigh Valley.	95,777	1,026,481
Del. & Lack. & W.	488,722	497,741
Del. & Hud. Co. Co.	443,847	427,646
Pennsylvania R. R.	281,949	279,263
Penn's Coal Co.	297,427	240,669
N. Y., L. E. & W.	111,520	121,597

Total. 2,602,615 2,615,686 15,761,808 16,626,453

New Jersey Central tonnage is included in the Philadelphia & Reading statement for both years. In addition to the amount given above there were 39,307 tons transported from mines by the Delaware & Hudson Canal Co. during July, which is included in tonnage of other interests.

The decrease in tonnage for the month was 18,071 tons, or 0.5 per cent.; for the seven months the decrease was 864,585 tons, or 5.2 per cent. For the seven months the Delaware, Lackawanna & Western, the Pennsylvania Railroad Co. and the New York, Lake Erie & Western show gains, the other four companies having had decreases in tonnage. The gains of the Lackawanna and the Erie were very small, the Pennsylvania Railroad Co. alone showing a substantial increase.

The percentage of the total tonnage carried by each company for the seven months was as follows:

Philadelphia & Reading.	1884.	1883.	Inc. or Dec.
Lehigh Valley.	35.9	38.6	D. 2.7
Delaware, Lackawanna & Western.	19.5	20.1	D. 0.6
Delaware & Hudson Canal Co.	17.0	15.9	L. 1.1
Pennsylvania Railroad.	10.8	10.9	D. 0.1
Pennsylvania Coal Co.	11.1	8.7	L. 2.4
New York, Lake Erie & Western.	4.4	4.7	D. 0.2
Total.	100.1	100.1	L. 0.1

The stock of coal on hand at tidewater shipping points

1884, was 672,267 tons; on June 30, 1884, 704,828 tons, decrease, 32,571 tons, or 4.6 per cent. during the month.

Cotton.

Cotton movement for the week ending Aug. 15 is reported as follows, in bales:

Interior Markets.	1884.	1883.	Inc. or Dec.	P. c.
Receipts.	1,383	7,217	D. 5,834	81.0
Shipments.	3,506	8,407	D. 4,841	57.4
Stock, Aug. 15.	18,906	52,016	D. 33,650	64.7
Seaports:				
Receipts.	2,898	10,305	D. 7,407	71.9
Exports.	15,504	17,977	D. 2,473	13.7
Stock, Aug. 15.	108,707	259,272	D. 90,565	34.8

The total movement of cotton from plantations, for the cotton year from Sept. 1 to Aug. 15, is estimated at 5,649,838 bales; the decrease, as compared with last year, is 1,314,508 bales; the increase, as compared with 1881-82 is 304,808 bales, and the decrease from 1880-81 is 875,862 bales.

New York Railroad Earnings.

Earnings reported to the New York Railroad Commission for the quarter ending June 30 are given as follows:

Earnings.	Net earn.	Charges.	Profit or loss.
Albany & Sus.	\$606,386	\$133,987	\$281,005 L. \$97,708
Bos. Hoss. & W.	111,368	13,038	3,750 P. 9,288
Hart. & Conn. West.	75,175	1,704	9,462 L. 11,166
New. Ditch. & Conn.	37,617	* 1,877	3,160 L. 5,037
N. Y. & Canada.	163,357	25,149	63,963 L. 38,804
N. Y. City & North.	87,917	2,630	67,559 L. 64,930
N. Y., N. H. & Hart.	1,706,486	632,842	237,873 P. 394,969
Renss. & Sar.	526,962	146,180	204,916 L. 58,736
Southern Central.	120,482	45,733	43,048 P. 2,685
Utica & Black Riv.	199,162	42,486	46,712 L. 4,223

* Deficit.

No comparisons can be made, as quarterly returns were not required last year.

Colorado Passenger Rates.

A circular was issued Aug. 15 by Commissioner Daniels of the Colorado Rate Association, restoring the passenger rates between Denver and Missouri River points as follows: by Union Pacific or Chicago, Burlington & Quincy, unlimited \$22.50, limited \$19; by way of Pueblo unlimited \$27.50. The rate from Pueblo by the Atchison, Topeka & Santa Fe is \$22.50, unlimited.

Passenger Rates.

At a meeting held in Indianapolis on Saturday, the agents of the several lines running from that city westward agreed to restore rates, thus putting a stop to the little passenger war which has been in progress at that point for a week or more past. The only result of that war has been that several hundred people have been carried from Indianapolis to Kansas City and other Missouri River points at a very low figure.

Express Freight in South Carolina.

The Railroad Commissioners of South Carolina adopted the following rule at a recent meeting: "The rate of freight by regular passenger trains shall not exceed the rate allowed by ordinary freight trains, with 50 per cent. added thereto, except where the classification is less than first class, when 50 per cent. advance on the rate allowed for first-class freight may be charged, and no railroad company shall, by reason of any contract with any express or other company, decline or refuse to transport any article proper for transportation on the train for which it is offered."

OLD AND NEW ROADS.

Allegheny Valley.—A writ of execution was issued in Pittsburgh, Aug. 15, on a judgment recovered by this company against the estate of W. Phillips, formerly President of the company. The judgment is for \$475,000, and levy will be made on the property of the estate. The litigation has continued for several years, the company claiming that a large amount of property held by Phillips and now in possession of his heirs was bought with the money of the company and for its benefit, although the title was taken in Mr. Phillips' name.

Atlantic & Pacific.—It is stated that the agreement under which the Colorado Division of the Southern Pacific is to be transferred to this company has been finally concluded and signed. This extends the line of the road from the Colorado River to Mojave, Cal., 242 miles, and also gives the company the right to run its trains through to San Francisco, the Central Pacific allowing the use of its tracks from Mojave. The price paid for the Colorado Division is said to be a little over \$7,000,000, or about \$30,000 per mile.

Boston & Albany.—This company's statements give the earnings for the quarter ending June 30 and the nine months of the fiscal year from Oct. 1 to June 30 as follows:

Quarter.	Nine months.
Earnings.	\$1,910,423
Expenses.	1,398,461

Net earnings. \$511,962 \$1,285,986

Per cent. of expenses. 73.2 77.8

No comparison can be made, as no quarterly statements were published last year. The road is carrying a larger tonnage this year, but rates have been lower.

Boston, Hoosac Tunnel & Western.—This company is building large stock yards at Rotterdam, N. Y., near the junction with the West Shore road. The yards will cover about 20 acres, and will accommodate a large number of cattle and hogs.

Reports continue in circulation that this company is trying to buy or lease the Troy and Boston road or to arrange for a consolidation of the two companies. There is no official confirmation of these reports, but it is possible that there may be something in them.

Central Pacific.—This company makes the following statement for the month of June:

1884.	1883.</th

Springs, which is about 28 miles from Los Angeles, and negotiations are now in progress for the letting of a contract to build this section of the road. It will reach several large ranches and some thriving villages. The plan is eventually to extend the road through the valley to San Bernardino.

Manhattan.—This company reports to the New York Railroad Commission that the gross earnings for the quarter ending June 30 were \$1,126,413. The net income was \$490,580. Taxes and interest amounted to \$268,809, leaving a net balance of \$221,771. This statement includes the Metropolitan Elevated lines for the entire quarter, but the New York Elevated lines only from April 1 to May 5, the New York lines having been operated separately from May 5 to the end of the quarter.

Marquette, Houghton & Ontonagon.—The following is this company's semi-annual statement upon which the recent semi-annual dividend of 2½ per cent. on the preferred stock was declared:

Total interest for whole year.....	\$216,000
Taxes and insurance.....	25,000

Annual charge.....	\$241,000
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Net earnings from March 1 to July 1.....	\$150,241
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Estimate for July.....	78,000
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Estimate for one-half of August.....	42,000—270,241
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Surplus in 5½ months above charges for entire year..... \$29,241

Stated as to preferred stockholders' earnings, the figures show as follows:

Estimated net, March 1 to Aug. 15.....	\$270,241
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11 24 (5½ months) of taxes, insurance and interest.....	110,458
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Surplus (7 per cent. on the preferred stock)..... \$159,783

The directors did not declare 4 per cent. on the preferred stock, because of the existence of floating debt (not above \$100,000), arising from the Houghton Extension, which cost \$150,000 more than the estimate. The company has \$500,000 of its 6 per cent. bonds in the treasury to pay off the floating debt at any time the markets become favorable for bond negotiations.

Memphis, Selma & Brunswick.—In Memphis, Tenn., Aug. 18, the United States Circuit Court granted an order on application of the judgment creditors appointing a receiver for this road, and designating Mr. M. Erb to that office. The decree authorizes the Receiver to issue certificates of indebtedness and to complete the line from Memphis to Holly Springs. It directs that all parties in interest shall be notified and appoints a final hearing for the confirmation of the decree on Sept. 2 next.

Memphis dispatches report that this action has been taken in consequence of an agreement or understanding reached between the judgment creditors, the Kansas City, Springfield & Memphis Co. and the Illinois Central. The road is to be completed as an extension of the Kansas City line to a connection with the Illinois Central's Southern Division. Mr. Erb, the new Receiver, is Attorney for the Kansas City, Springfield & Memphis Co., which desires a New Orleans and Southern connection. The creditors of the Memphis, Selma & Brunswick road are doubtless glad to secure assistance from any source to complete the road, which is at present their only chance of getting back any of their money.

Mexican Railroad Notes.—The following notes are from the Mexican Financier of Aug. 9:

It is reported that work will be commenced this month on the line from Matamoros to Monterey, and that construction will be pushed until it is completed.

It is reported that a concession has been granted to Messrs. Barruas, Corrillo and Castañares to build a railroad from Zacatecas to Jerez and Villanueva, with a limit of five years for construction.

Five persons have been arrested for stealing 400 spikes on the Guanajuato Branch of the Mexican Central. The spikes were taken up near kilometer 4, leaving the rails loose, so that the train of July 22 was delayed until the track could be repaired.

The plans for the Tuxtla Railroad, drawn up by the engineers in charge of construction, have been sent to the Minister of Public Works. According to the surveys already made, covering 10 kilometers, the railroad will start from a place called Amatixpan, on the San Juan River.

The beginning of work on the construction of the Mexican Central's branch from Lagos to Guadalajara, is anticipated in the latter city with considerable impatience, as its inhabitants already realize the superior advantages in the way of transportation possessed by the eastern portions of the country.

Since July 8 a gang of 100 laborers has been employed, between Vireyes and Perote, on the grading of the Inter-oceanic Railroad. As the work is being pushed rapidly it is expected that it will be opened for business within four months as far as Perote. Materials for construction will probably arrive in Vera Cruz in a few days.

Manuel Zapata Vera and Manuel Sanchez Marmol have been granted a concession to build a railroad and telegraph line from San Juan Bautista, Tabasco, on the Grijalva River, to Tierra Colorado, with branches to the Mexcalapa and Espejo rivers. As per terms of the contract, work must be begun within six months, provided the plans are approved, and finished within two years.

Milwaukee, Lake Shore & Western.—This company's engineers are now employed at Ashland, Wis., laying out the terminal grounds and locating docks upon which work will be commenced this summer. From Ashland eastward a considerable force is employed chopping out the right of way, and a large number of men will soon be at work on the grading. As soon as the work of the engineers is completed at Ashland, choppers will be set at work clearing out the site of the yards, round-house, shops, etc., and making preparations for the commencement of work on the building.

Minneapolis & St. Louis.—This company's Pacific Division is now completed and opened for business to Marietta, Minn., 182 miles from Minneapolis and 81 miles west by north from the late terminus at Morton. The Pacific Division is now 174 miles long, from Hopkins, the junction with the main line to Marietta. The new stations beyond Morton are: Redwood Falls, Delhi, Echo, Norlake, Hanley, Hazelrun, Clarkfield, Christians, Dauson, Marietta.

New York Central & Hudson River.—Officers of this company deny the report that a issue of debenture bonds is to be made. They state that the company has no floating debt beyond the ordinary current balances, and there is no occasion for an issue of bonds. The extension of the Grand Central Depot of New York, upon which work has been begun, is made by the New York & Harlem River Railroad Co., which leases the property to the New York Central, and bonds for the payment of that extension will be issued by the Harlem Co., and not by the Central.

New York City & Northern.—This company's statement for the quarter ending June 30, shows that the gross earnings for the quarter were \$87,916, and the net earnings \$2,628. With the interest the rental charges for the quarter were \$87,559, leaving a deficiency of \$84,931. On June 30

the floating debt of the road amounted to \$1,734,908, and the offsets to \$98,646.

New York, New Haven & Hartford.—A correspondent, R. M., writes concerning the ballasting of this road as follows: "The item given in your paper of Aug. 1 as to the description of the manner of putting in the ballast was correct, but the work is going on at a much faster rate than one mile a month. There are now 30 miles completed, from North Haven to Hartford, with stone ballast 14 in. deep and some places more, and 23 ft. wide. The ballasters are now receiving an average 650 cubic yards daily of broken stone, which is equal to about three miles of double track per month. In June there were 2.5 miles completed and in July 2.65 miles. The work is expected to go on at the rate of three miles per month until stopped by frost."

New York, Philadelphia & Norfolk.—This road is now completed to Accomac, Va., 27 miles southward from the old terminus at Pocomoke, Md., and 22 miles from the Maryland line. Grading is well advanced on the 31 miles from Accomac to Cherrystone, and tracklaying is in progress.

New York, Susquehanna & Western.—In Trenton N. J., Aug. 15, the Chancellor filed an opinion overruling the demurser of the defendant in the suit brought by Richard P. Terhune to set aside the consolidation of the Midland Railroad Co. of New Jersey into the present company. The case will now come up for trial on its merits.

Northern Pacific.—On the Cascade Division the 25 miles of grading built last year are now being repaired and put in good condition. Tracklaying will soon be begun at Ainsworth. Several bids have been received for the 25 miles of grading from South Prairie eastward, but the contract has not yet been let. On the contract recently let for 25 miles work has been begun, men being employed on several sections already. A force is now employed in making the connection with the main line at Ainsworth, where a heavy grade is required.

Oregon & California.—Formal notice is given of the canceling of the lease of this road to the Oregon & Transcontinental Co. by mutual agreement and of the surrender of the property to the Oregon & California Co.

In relation to the surrender of the lease President Villard is reported as speaking as follows in London:

"The Oregon & Transcontinental Co. agreed: (1) To surrender at once the possession of the railroads and their entire equipment, and all other real and personal property of this company in their possession. This was done on the evening of Saturday, June 28; (2) To waive all claims to the \$400,000 first mortgage, and \$110,000 second mortgage bonds, due to them for the construction of the last 20 miles finished (125 to 145 miles south of Roseburg), but withheld by this company on account of the suspension of construction work and minor violations of their contract. We were thus enabled to make use of these securities to provide for our July interest, which otherwise we could not have done, the Transcontinental Co. having received the earnings of the line and being quite unable to pay in cash the rental stipulated to this company; (3) To resell to us all the second mortgage bonds received by it (\$2,000,000) for the sum of \$446,000, payable without interest, Jan. 1, 1885.

"The Oregon & California Railroad Co. on its part, agreed to assume (in addition to the payment last mentioned) all the unsettled balances due by the lessee company on construction and other accounts. Our accounting officers have reported by cable that the total of these liabilities, after deducting available resources, is \$210,000, and I believe the following statement shows, with substantial accuracy, the extent of all liabilities of this company (outside of its bonded debt), on June 28, including the \$446,000 to O. & T. Co. (due Jan. 1, 1885), was \$871,500. No part of these liabilities is secured by mechanics' liens or by judgments. The net earnings for six months ending June 30, 1884, were \$110,815, against \$74,951 in first half of 1883. The financial position of the company is in substance as follows:

"In virtue of the terms of the reorganization plan (as modified in March, 1883), and of the settlement with the Oregon & Transcontinental Company, the issue of securities is limited to \$20,000 per constructed mile of first-mortgage bonds and \$10,000 per constructed mile of seconds. Of these securities the company now has at its disposal \$225,000 first-mortgage bonds and about \$3,100,000 second-mortgage bonds, while floating debt (including the sums payable to the Oregon & Transcontinental Co.) does not much exceed \$800,000. The increase of mileage by the completion of the main line will increase these amounts by about \$600,000 firsts and \$300,000 seconds. * * * Owing to the recent resumption of the possession of our lines, your board have not had sufficient time to mature proper plans; but they intend to make recommendations to you on the subject as soon as practicable."

Plant Investment Co.—Mr. Henry M. Drane, Special Assistant and Agent, gives notice that the office of this company was removed from Live Oak, Fla., to Savannah, Ga., Aug. 14, and that it will remain in Savannah until further notice. It is requested that all communications intended for the construction department of the company be addressed to the respective parties, in care of the Plant Investment Co., at Savannah.

Rochester & Pittsburgh.—A special committee recently appointed by the stockholders has decided to take action immediately. The first step will be to enter a formal defense to the foreclosure suit, and it is understood that the committee has also decided to make application to the Attorney General of the State requesting him to take official action to remove the president and officers of the company for improper acts.

St. Johnsbury & Lake Champlain.—At the annual meeting in St. Johnsbury, Vt., last week, a board of directors was chosen, a majority of the members of which are interested in the Connecticut River Railroad Co. The new directors hold a controlling interest in the road. At the meeting it was stated that during the past year 3,600 tons of steel rails had been laid, making nearly one-half the road now of steel. The road has been put in much better condition than ever before, and it is expected that the large expenditures made for improvements will considerably lessen the operating expenses of the line. It was also stated that the earnings for last year show a considerable increase.

St. Louis, Fort Scott & Wichita.—On the extension of this road the grading is now nearly finished to Anthony, Kan., 39 miles west from the present terminus at Clearwater and 60 miles from Wichita. Tracklaying is in progress.

Sheffield & Spring Creek.—This company has filed articles of incorporation in Pennsylvania to build a railroad from Spring Creek on the Pittsburgh & Western road to Sheffield, 15 miles. The capital stock is \$100,000. It is to be a branch of the Pittsburgh & Western.

Texas & Pacific.—This company has had surveys made for a cut-off from Waco, Tex., which is close to the

Louisiana line, to Reisor, La., which is on the New Orleans Division 10 miles south of Shreveport. The length of the cut-off will be about 20 miles, and it is evidently intended to complete a connection between the New Orleans and Marshall divisions when the Vicksburg, Shreveport & Pacific Co. shall resume possession of its line from Shreveport to the Texas line, which is now leased by the Texas & Pacific

Topeka, Salina & Western.—Grading on this road is reported complete from Topeka, Kan., west 15½ miles, and also from Council Grove westward 35 miles to Hope, most of this work having been done last year. Track is reported down from Council Grove west to Wilsey, 12 miles.

Troy & Greenfield.—The following statement of tolls received, etc., is for the six months of the fiscal year from Oct. to March 31:

Fitchburg Railroad	\$90,454
Boston, Hoosac Tunnel & Western	12,305
Troy & Boston	10,743
New Haven & Northampton	9,514

Total tolls received	\$132,016
Expenses	106,655

Net balance	\$25,361
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Expenses include only maintenance and management, the companies using the road furnishing their own motive power. Expenditure for construction and improvements were \$108,951, showing a deficiency of \$88,580 for the month.

Union Pacific.—The strike of the shop employés on this road which began at the shops at Ellis, Kan., and extended to those at Kansas City, Denver, Cheyenne, and North Platte, has been ended, satisfactory terms having been concluded by General Manager Clark, in accordance with whose request a committee of the men visited Omaha and held a consultation. The result was an order from Mr. Clark for the men to resume work at the old wages, all who had been dismissed previously to the strike to be reinstated in their positions. It is stated that the division master mechanics had cut down the working force and also ordered a reduction of wages without orders from headquarters.

The Oregon Short Line is now completed to its terminus at Huntington, Or., 28 miles beyond Weiser, Idaho, the last point noted. The distance from Granger, Wyoming, the point of junction with the main line, to Huntington is 542 miles. Granger is 877 miles from Omaha, so that the distance from Omaha to Huntington is 1,419 miles. At this terminus the Short Line will be met by the branch or extension which the Oregon Railway & Navigation Co. is now building, to complete the connection with Portland, and which will probably be finished this season.

The company's statement for June and the six months ending June 30, is as follows:

June.	1884.	1883.	June.	1884.	1883.
Earnings	\$2,196,283	\$2,273,507	\$11,497,170	\$12,969,723	
Expenses	1,149,437	1,157,044	7,207,260	6,582,248	
Net Earnings.	\$1,046,846	\$1,116,553	\$4,289,913	\$6,387,475	
P. c. of exps.	52.4	50.9	62.7	50.8	

For the six months this shows a decrease of \$1,472,544, or 11.8 per cent. in gross earnings: an increase of \$625,018, or 9.5 per cent. in expenses, and a resulting decrease in net earnings of \$2,097,562, or 32.8 per cent.

Accompanying the statement is the following: "The foregoing is a correct statement of the operations of the roads of the company during the month of June and the six months ending June 30. While Messrs. Adams and Ames were at Omaha, the Auditor reported that certain accounts, properly chargeable against income, the greater part of them of long standing, had been carried on the books, and remained to be distributed. The charges in question were proper in character. Mr. Adams, therefore, directed that these charges should all be reported to him, properly distributed and charged off. The change of administration took place practically upon the 1st of July, and it was deemed proper that previously incurred liabilities, book charges, etc., should be finally disposed of before that date. Accordingly, the semi-annual detailed statement of the company now in preparation will show surplus earnings nominally some \$450,000 less than the above aggregate of the monthly statements."

Virginia & North Carolina.—It is now pretty well settled that this road is to pass through Petersburg, Va., and the company's engineers have commenced locating a new route which is to carry the road through that city. The original line surveyed was from Ridgway direct to Richmond, passing to the westward of Petersburg.

Wabash, St. Louis & Pacific.—The Receivers give notice that the coupons which matured July 1 on North Missouri first-mortgage bonds, Chicago Division first-mortgage bonds and St. Louis, Council Bluffs & Omaha first-mortgage bonds will be paid on presentation to the National Bank of Commerce in New York on and after Aug. 25.

The Commercial and Financial Chronicle of Aug. 16 says: "Among all Mr. Gould's railroad operations none have been more striking than those in connection with Wabash. How the company was raised from deep insolvency; how Mr. Cyrus W. Field allowed himself to be made President for a time; how the stock was bought up at almost nothing and sold out at fabulous prices; how the leases of numerous lateral roads were made at immense rentals; how the stock was listed in London; how the general or blanket mortgage bonds were created and widely distributed to the amount of \$17,000,000, furnishing the required cash for a season; how the famous dividend of November, 1881, was declared on the preferred stock, when the company was already known to have a large deficit; the unloading of insiders on the strength of that dividend; the leasing of Wabash to the St. Louis & Iron Mountain Railroad, giving control of the road without the ownership of a share of stock; the advance money by directors; the collateral trust loan—the *dernier resort* of modern railroad financiers; the final insolvency in June, 1884, and the appointment of one of the most prominent directors as receiver; the issue of receivers' certificates to pay off notes in discharge by directors; the recent meeting, in the nature of a funeral, at which Mr. Gould as President showed his resignation (controlling, with Iron Mountain, the chief assets of the deceased), and the managers' committee submitted their plan for the future resurrection, in which the unprofitable leases made by them are to be shaken off, the lien of the general mortgage extinguished; the stockholders heavily assessed, and the directors are to be paid off in cash—all the above circumstances contribute to make the history of Wabash since Mr. Gould took it one of the most remarkable and interesting that has ever occurred in American railroading. It is even phenomenal, embracing in a comparatively short period nearly every phase of kite-flying, watering, stock-jobbing, bankruptcy of the company and assessment of stockholders, which are so frequently commented on in London and Amsterdam as being the common characteristics of American railroad management."

"The above remarks are intended only as a recital of facts which ought to be remembered, and not to prejudice stockholders in assenting to the proposed plan of reorganization, if they think it desirable to do so."